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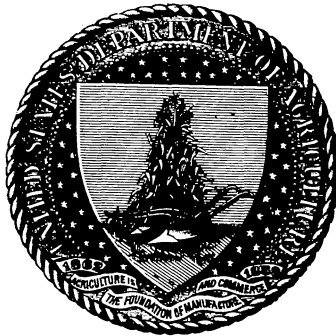
FARMERS' BULLETIN No. 106.

BREEDS OF DAIRY CATTLE.

BY

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., September 20, 1899.

SIR: I have the honor to transmit herewith, and to recommend for publication as a Farmers' Bulletin, an article on Breeds of Dairy Cattle, prepared under my direction by Maj. Henry E. Alvord, chief of the Dairy Division of this Bureau. It was originally intended for and will appear in the Fifteenth Annual Report of the Bureau of Animal Industry, but it is of sufficient value to receive the wider distribution that is given to Farmers' Bulletins. The article is substantially the same as that in the report referred to, the slight revision and abridgment being necessary to adapt it to the popular style and size of a Farmers' Bulletin, in which form it is believed that it will prove of special value to dairymen and of general interest.

Very respectfully,

D. E. SALMON, *Chief.*

Hon. JAMES WILSON, *Secretary.*

CONTENTS.

	Page.
Introduction	5
What is a breed?	5
Origin of breeds	5
Number of pedigreed dairy cattle in the United States	6
Ayrshires	6
Origin and history	6
Characteristics	7
Milk and butter records	9
Types	11
Brown Swiss	11
Origin and history	11
Characteristics	12
Milk and butter records	12
Types	14
Devons	15
Origin and history	15
Characteristics	15
As milk and beef producers	16
Types	16
Dutch Belted	18
Origin	18
Characteristics	18
Types	19
Guernseys	20
Origin and history	20
Characteristics	20
Milk and butter records	21
Types	22
Holstein-Friesians	24
Origin and development	24
Characteristics	25
Milk and butter records	26
Types	28
Jerseys	29
Origin and history	29
Characteristics	30
Milk and butter records	32
Types	34
Polled Durhams	35
Origin and history	35
Characteristics	36
Types	36

	Page
Red Polls.....	38
Origin and history.....	38
Characteristics.....	39
Milk records.....	39
Types.....	41
Shorthorns.....	41
Origin and history.....	41
The Shorthorns in America.....	42
Characteristics.....	43
Milk and butter records.....	44
Types.....	45
Appendix.....	46
Comparison of dairy breeds.....	46
Points observed in judging dairy cattle.....	48
Organizations of breeders.....	48

ILLUSTRATIONS.

Fig. 1. Ayrshire bull John Webb 5180.....	10
Fig. 2. Ayrshire cow Red Rose 5566.....	10
Fig. 3. Brown Swiss bull Gilbo 720.....	13
Fig. 4. Brown Swiss cow Brienzi 168.....	13
Fig. 5. Devon bull Fine Boy of Pound 6185.....	17
Fig. 6. Devon cow Miss T 9605.....	17
Fig. 7. Dutch Belted bull Duke of Ralph 255.....	19
Fig. 8. Dutch Belted cow Lady Aldine 124.....	19
Fig. 9. Guernsey bull Sheet Anchor 3934.....	23
Fig. 10. Guernsey cow Fantine 2d 3730.....	23
Fig. 11. Holstein-Friesian bull De Brave Hendrik 230.....	27
Fig. 12. Holstein-Friesian cow Jamaica 1336 and calf.....	27
Fig. 13. Jersey bull Pedro 3187.....	33
Fig. 14. Jersey cow Brown Bessie 74997.....	33
Fig. 15. Polled Durham bull Young Hamilton 49.....	37
Fig. 16. Polled Durham cow Daisy 2.....	37
Fig. 17. Red Polled bull Dobin 3462.....	40
Fig. 18. Red Polled cow Beauty 5th 2629.....	40
Fig. 19. Shorthorn bull Baron Cruickshank 106296.....	45
Fig. 20. Shorthorn cow Kitty Clay 4th.....	45
Fig. 21. Diagram of cow showing points.....	48

BREEDS OF DAIRY CATTLE.

INTRODUCTION.

What is a breed?—The domestic cattle of the world are probably descended from one parent stock, but variation began at a very early period. Through ancient sculptures and other records cattle can be traced back at least four thousand years, and the earliest evidence shows that animals of different types were then known. In various parts of the world there are now cattle so distinct in their characteristics as to justify their claim to be regarded as breeds, and these breeds exceed 100 in number. A subdivision of a family in the animal kingdom may be recognized as a breed when it has been subjected to and reproduced under the same conditions until it has acquired a distinctive character common to all the members and naturally reproduced with very slight variations. This definition, and the term breed, applies especially to domestic animals, and the differences which chiefly distinguish the breeds of the present day are the result of artificial treatment by man—the work of skillful breeders having definite objects in view.

Origin of breeds.—The different breeds of cattle to be found in the United States all came from Great Britain and the western portions of Europe, and it is not at all unlikely that they have a common origin in the wild cattle which existed in the ancient forests of Europe. These were described by Julius Cæsar, Pliny, and other Latin writers almost two thousand years ago, and by others who wrote of them a century or two later as abounding in the great forests around London. They were also mentioned frequently in chronicles of the middle ages.

In the early history of these cattle natural causes tended to divide them into two general classes; first, those adapted to the more mountainous and less fertile sections of country, and, second, those of the plains and richer regions. The former, owing to greater scarcity of food and more difficulty in obtaining it, were smaller, more rugged, and rougher in type than the better-fed animals of the latter class. Later, breeding and artificial conditions, together with natural causes, resulted in additional variations among cattle, and led to the distinctions which became fixed in different breeds. The chief characteristics resulting from man's interference and control were to be first seen, on the one hand, in a tendency of the animals to mature at an

early age and easily to lay on flesh and fat, and, on the other hand, in prolonging the natural period of milk flow and increasing the milk product much beyond the needs of the calf.

At the present time each of the various recognized breeds of domestic cattle may be satisfactorily placed in one of two great classes designated, respectively, as beef cattle and dairy cattle. This bulletin is intended to deal with the latter, giving something of the history and describing the characteristics of those breeds which are valued especially for their dairy qualities and of a few which belong primarily to the beef breeds, but also possess dairy merit. Some of the dairy breeds of Europe are not included; it seems enough to present those which are known in the United States—which have already made an impress upon the neat stock of this country, and which promise to be of value in promoting dairy interests.

Illustrations representative of the several breeds described accompany the text, being the likenesses of two mature animals, a bull and a cow, in each case.

Number of pedigreed dairy cattle in the United States.—The following table shows the number of animals of each breed described in this bulletin which have been registered in the United States, and the estimated number of the same living in 1898:

Number of animals registered in the United States, and estimated number of these living in 1898.

Breeds.	Number registered.	Number living.
Ayrshires	22,000	6,050
Brown Swiss	2,871	1,250
Devons	18,343	10,000
Dutch Belted	1,128	500
Guernseys	16,600	11,000
Holstein-Friesians	100,000	60,000
Jerseys	184,000	90,000
Polled Durhams	1,321	1,200
Red Polls	<i>a</i> 19,068	(?)
Shorthorns	366,545	140,000
Total	731,876	320,000

a Includes all in Great Britain and United States.

AYRSHIRES.

Origin and history.—The county of Ayrshire, in the southwest part of Scotland, stretches for 80 miles along the lower portion of the river Clyde and the Irish Sea. The surface is undulating in large part, with moory hills, much woodland, and a climate moist and rather windy, although not severe. It is a region of moderate fertility, with natural pasturage so distributed that grazing animals must travel long distances in a day to satisfy their hunger.

In this county Ayrshire cattle were brought into their present fixed form. The breed is among the youngest of well-established type. Careful writers of a little more than a hundred years ago failed even to mention this breed, and the cattle of Ayrshire described in 1825 bear little resemblance to the present stock of the country and must have been only a foundation race, small, unshapely, and generally black, with white markings.

The Ayrshire breed has been built up within the nineteenth century by the liberal use of blood from the cattle of England, Holland, and the Channel Islands. The exact facts and methods are unknown, but the result testifies to the good judgment in selection and breeding of those who carried on the work. The Ayrshire of the present day—which is found best developed in Cunningham, the upper and most fertile of the three divisions of the county—bears strong resemblance to the Jersey in certain features; and in form, color, and horn it resembles the wild white cattle of Chillingham Park. Many people believe the cattle to be direct and but slightly varied descendants of the original wild cattle of Great Britain. There is a well-defined tendency in the improved Ayrshire to become lighter in color, many being almost white. This is additional evidence of a strong infusion of the blood last mentioned at some period in the history of the breed.

The first Ayrshires in America were brought to New York in 1822. They were imported into New England in 1830 and into Canada in 1837. In 1837 there was quite a large herd in Massachusetts, and several importations were made prior to 1845. From that time until 1875 there were more or less importations yearly, but there have since been less. This breed has been a special favorite for dairy purposes in Canada and highly esteemed in the New England States and parts of New York. Elsewhere in this country these cattle do not seem to be so well known as their established merits deserve.

Characteristics.—Unless it be the little Irish Kerry, there is no cow which excels the Ayrshire in obtaining subsistence and doing well on a wide range of scanty pasture or in thriving and giving a dairy profit upon the coarsest of forage. “The natural hardihood of constitution renders these cattle admirably adapted to grazing on broken and rugged pastures and in sterner weather than would be conducive to the well-being of cows of some other breeds.” The end sought in perfecting the breed has been a large yield of milk without extravagance of food. It is a characteristic of the Ayrshire that she carries her weight only, and lives only, to serve dairy interests with the utmost economy in the utilization of food. Yet, like all other good dairy cattle, the Ayrshire responds promptly and profitably to liberal feeding. The Scotch have a saying, taught by experience, that “the cow gives her milk by the mou’.”

Ayrshires are of medium size among dairy cattle. The bulls attain a weight of 1,400 to 1,800 pounds at maturity, sometimes being larger.

The cows weigh 900 to 1,100 pounds, averaging probably 1,000 pounds in a well-maintained herd. They are short-legged, fine-boned, and very active. The general form is of the wedge shape, regarded as typical of cows of dairy excellence; and this shape is not from any weakness forward, but rather because of uncommon development and strength of body and hind quarters. Good specimens of the breed, when in milk, do not carry a pound of extra flesh. The face is usually rather long and straight, but clean and fine, with a full growth of horn curving outward, then inward, and turning well up, with tips inclined backward. The general appearance of the horns is upright and bold, while usually symmetrical and often quite graceful. A black muzzle is the rule, although white seems to be allowable. The eye is peculiarly bright, with a quick movement indicating extreme watchfulness. The prevailing color of the body is red and white, variously proportioned; in spots, not mixed. Probably three-fourths of all the breed can be thus described as to color. A generation ago the dark markings predominated; but there is now a drift toward more white. Several prize winners at the Columbian Exposition might be called white cows. The red is sometimes bright, but often of a rich, shiny brown, like the shell of a horse chestnut, and the coat of a thrifty Ayrshire is equally bright and shining. Sometimes the color is a dull brown, and occasionally a brindle appears. Nearly all good animals of this breed have broad, flat, well-arched ribs, giving room for capacious digestive apparatus.

Dr. Sturtevant thus describes the milking parts of the Ayrshire cow: "The udder has been the point toward which the search after quality has been directed by the careful Scotchman for a long period of time. Although it differs in outward shape in individuals, it yet retains a certain uniformity which may be considered typical. This is in the gland and the teat. The glands are rather flattened than pointed or elongated, as in other breeds. These are well held up to the body, and in the types of the breed extend far forward and back, with a broad and level sole. The teats are small and of a cylindrical shape rather than cone-shaped, as seen in other cows. The udder is admirably fitted, by its elasticity, for the storage of milk, and when the glands are at rest occupies but little space. The eye accustomed to seeing the pendent, fleshy udder so often met with in dairy animals is apt to underrate, in comparison, the capacity of the small bag of this breed, with its wrinkled and folded covering, so deceptive to the unskilled but so full of promise to the educated observer."

At the proper time these wrinkles smooth out, the folds expand, and the filled udder of the Ayrshire has come to be regarded as a model in shape for all dairy breeds. The teats are, however, often too small for comfortable milking; but careful breeders have remedied this defect, and whole herds can be found with superb udders and teats of good size, although rarely large.

The Ayrshire is of a highly nervous temperament. The cow has a superabundance of nerves and is willing to employ them, upon instant demand, in self-defense or self-support. The bulls, if properly handled, are not fractious, but the cows are rather inclined to be quarrelsome. They are always active and energetic, stop only for a purpose, move off with a brisk walk, and often trot without special provocation. Promptness is one of the characteristics of the breed.

Although these cattle can lay no claim to being specially adapted to beef production, the calves are thrifty and full-fleshed, and steers and dry cows fatten readily on suitable feeding. Their carcasses are small, but they always give an unexpectedly large percentage of dressed meat, and its quality is excellent, fine-grained, and well marbled.

Milk and butter records.—The Ayrshire cow is a large and persistent milker. A yield of 5,500 pounds a year, as an average for a working herd in good hands, is depended upon and often realized. Records of 18 well-managed herds, collected from different sections and averaging 12 cows each, show an annual average product of 5,412 pounds. One noted herd, averaging 14 cows in milk, has an unbroken record for nineteen years with an average product of 6,407 pounds a year to the cow. In the last year recorded 19 cows averaged 6,956 pounds of milk. Four of the cows in this herd gave over 10,000 pounds in a year and one over 12,000 pounds. Butter records are not numerous, but in the herd last referred to the milk averaged $4\frac{1}{2}$ per cent of fat for the last year and the cows averaged 353 pounds of butter each, ranging from 244 to 512 pounds. In previous years single cows in this herd made butter records of 504, 546, 572, and 607 pounds within twelve months.

Another Vermont herd has a detailed record for eight consecutive years. The average yearly milk yield of the cows 3 years old and over has been, in different years, from 6,003 to 6,440 pounds; every year single cows exceed 7,000 pounds and sometimes 8,000. The milk of this herd averages over 4 per cent butter fat, and the yearly herd record ranges from 306 to 319 pounds of butter per cow; single cows have butter records of over 400 pounds per year. The most interesting fact connected with this herd is the economy of the rations upon which these records have been made: In summer, pasturage alone; in winter, to each cow, daily, 1 bushel of ensilage of matured field corn, an average of 2 quarts each of corn meal and wheat bran, and plenty of good hay.

The milk of the Ayrshire is not exceptionally rich, but somewhat above the average. Herd records show $3\frac{1}{2}$ to 4 per cent of butter fat in the mixed milk throughout the year. The milk of this breed is very uniform in its physical character, the fat globules being small, even in size, and not free to separate from the milk. Cream rises slowly and has comparatively little color. The Ayrshire is therefore

not a first-class butter cow, but its milk is admirably suited for town and city supply, being safely above legal standards, uniform, and capable of long journeys and rough handling without injury.

A special reputation which this breed has enjoyed as superior cheese

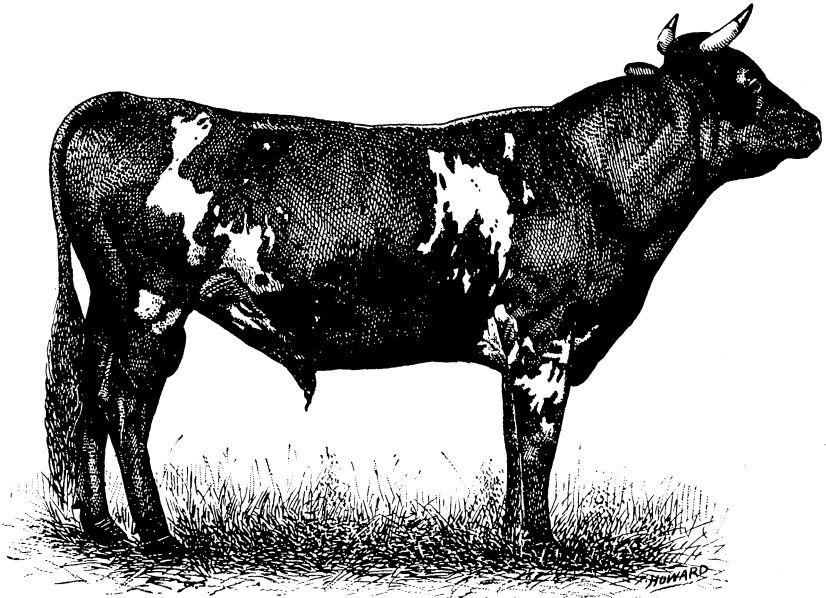


FIG. 1.—Ayrshire bull John Webb 5180.

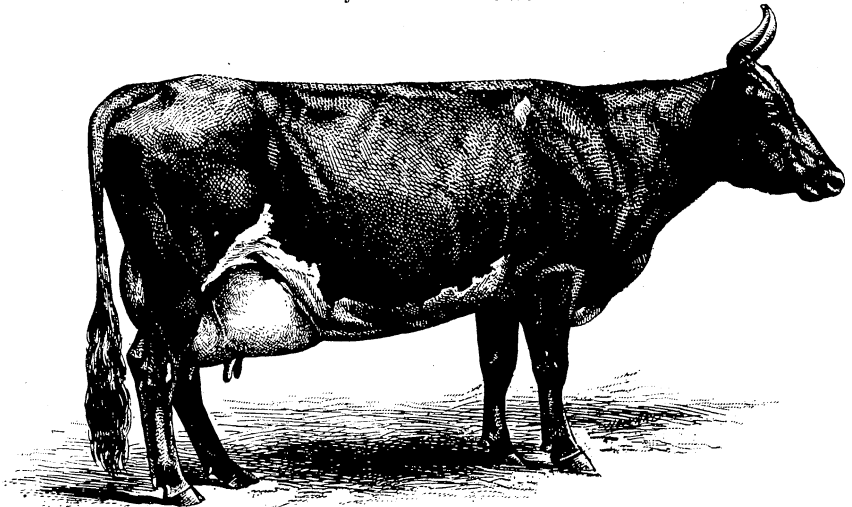


FIG. 2.—Ayrshire cow Red Rose 5566.

makers is not sustained by the facts. In the hands of capable makers Ayrshire milk will make little if any more cheese from a given weight than will the milk of other breeds. The uniform distribution of the

fat is an advantage, and there is less liability to lose fat in converting this milk into cheese than in the case of richer milk with fat globules larger or irregular in size.

The breeders of Ayrshire cattle in America organized in the year 1863 and began the publication of a herdbook. The interests of the breed are now represented by the American Ayrshire Breeders' Association. The last volume of the Ayrshire Record is No. 12, issued in 1899. The total number of registered animals is about 22,000, and it is estimated that 6,000 of these are living and distributed among 500 or 600 owners, mainly in the New England and Middle States, Ohio, and Wisconsin.

Types.—The bull whose likeness has been selected as a good type of the Ayrshire is John Webb 5180. He was bred in this country, several generations removed from imported ancestry, was 6 years old when the picture was made, and then weighed over 1,400 pounds. He was never shown except at county fairs, where he always won first honors. His sire was a first-prize bull at New York State fair, and the sire of noted dairy animals, among them a half sister to John Webb, which, at a fair-ground test, gave 50 pounds of milk in a day, from which $2\frac{1}{4}$ pounds of butter were made. The dam and granddam of this bull were also fine dairy cows, the latter having a record of 9,245 pounds of milk and 576 pounds of butter and two calves within eleven months. Young cows sired by him have given over 7,000 pounds milk a year, and one, 4 years old, about 10,000 pounds. Although well engraved from a faithful photograph, this likeness gives the bull rather too light and leggy an appearance, but shows his fine style and dairy quality.

The cow selected to match is an imported animal, Red Rose 5566. This picture shows admirably the typical head, horn, and udder of the breed—the last in its best form; also the distinctly wedge shape which is believed to characterize fine dairy animals. She was brought from Scotland in 1875, and was the leading cow in the prize herd for her breed at the Philadelphia Centennial Exposition the next year. She was photographed at that time, being then 5 years old. Her milk product for one year was 8,578 pounds, or practically 1,000 gallons.

BROWN SWISS.

Origin and history.—Switzerland has been famous as a dairying country for some centuries. It is especially noted for cheese, and it is said that seventeen different kinds are regularly exported to other countries. Two distinct races of cattle contribute to these products, and both are excellent dairy animals. In many respects they are unequaled by any of the other breeds of continental Europe.

The Brown Swiss is the breed better known in the United States. It is called also Brown Switzer, but more properly Brown Schwyz, from the Canton Schwyz, where the breed originated or, at least, has

been bred longest and is still found of truest type. It is now common to the other cantons of eastern and central Switzerland and has a fine reputation throughout Europe. These cattle have been especially successful as prize winners at Paris, Hamburg, and other large exhibitions of live stock.

The first pure-bred animals of this breed brought to the United States comprised one bull and seven heifers, imported from the Canton Schwyz to Massachusetts in the autumn of 1869. It was not till 1881 or 1882 that other importations were made, but meanwhile this first little herd had been kept pure and had increased to nearly two hundred in number. During the years 1882 and 1883 several importations were made and there have been a number since. Where they have become known these cattle have made a favorable impression among dairymen, and herds of different sizes can now be found in States of all parts of the Union.

Characteristics.—The Brown Swiss may be placed in the second class as to size among the distinctly dairy breeds. They are substantial, fleshy, and well proportioned, with very straight, broad back, heavy legs and neck, giving a general appearance of coarseness. But when examined they are found to be small-boned for their size and to possess a fine, silky coat, and rich, elastic skin, with other attractive dairy points. Although generally described as being brown in color, the brown runs through various shades and often into a mouse color and sometimes a brownish dun, especially for the saddle or body. Head, neck, legs, and quarters are usually darkest in color, often almost black. The nose, tongue, hoofs, and switch are quite black. Characteristic markings of the breed include a mealy band around the muzzle, with a light stripe across the lips and up the sides of the nostrils, a light-colored tuft of hair between the horns, and a light-colored stripe extending all the way along the back to the tail. The eyes are full and mild, but bright, usually black. The horns rather small, white, waxy, curving forward and inward, with black tips. The ears are large, round, and lined with long silky hair, light in color. The barrel of the body is large and well rounded. The udder and teats are large, well formed, and white, with milk veins very prominent. The cows often carry remarkably well-shaped escutcheons. The animals of a herd are generally even in appearance, showing careful breeding extending through many generations. Bulls and cows are alike docile and easily managed. The cows are so plump and compact as to appear smaller than they really are. Mature animals weigh from 1,200 to 1,400 pounds, and often more; bulls run up to 1,800 pounds and over, yet are not so much heavier than the females as in most breeds. These cattle are extremely hardy and very active for their size, being necessarily good mountain climbers in their native country.

Milk and butter records.—Developed as a dairy breed primarily, Brown Swiss cows yield a generous flow of milk and hold out well.

Good specimens may be expected to give an average of 10 quarts for every day in the year. Six thousand pounds a year is an ordinary

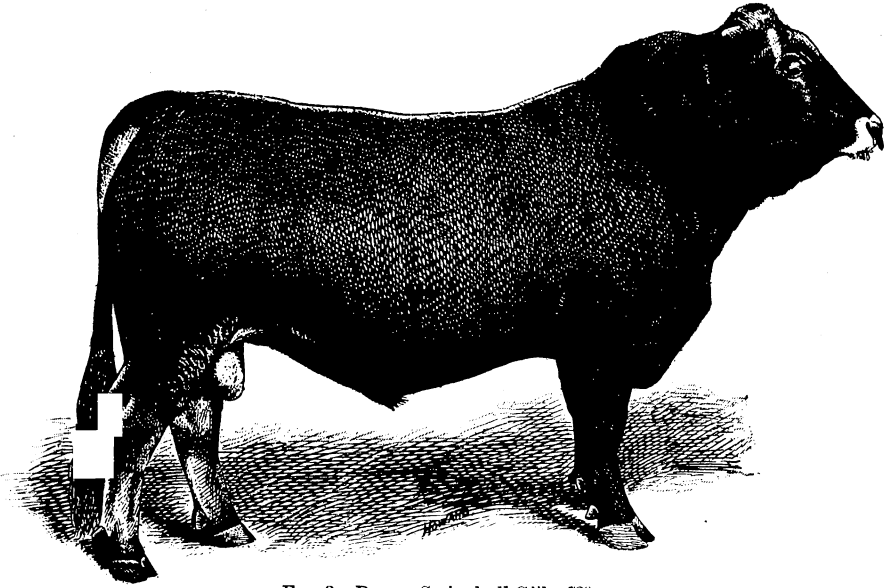


FIG. 3.—Brown Swiss bull Gilbo 720.

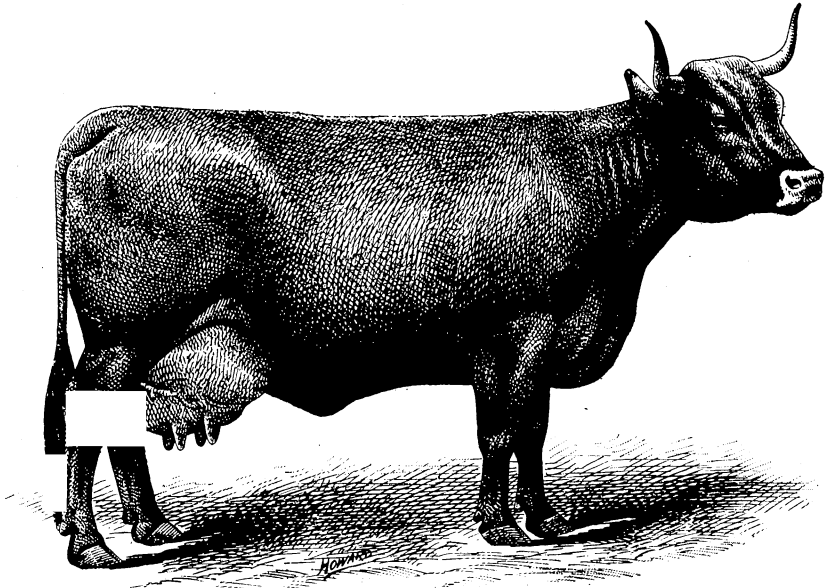


FIG. 4.—Brown Swiss cow Brienzi 168.

record, and single instances are known of 8,000 to 10,000 pounds. One Swiss cow owned in Massachusetts produced, by accurately recorded weights, 86,304 pounds of milk before 12 years old. The

quality of milk is above the European average, $3\frac{1}{2}$ to 4 per cent of fat being usual. The cow mentioned above made a butter record ranging from 500 pounds to 610 pounds per year for four years, but this was exceptional. Ordinarily 22 pounds of the milk of this breed will make 1 pound of butter, and sometimes it does better.

The description given indicates that these cattle are good for beef as well as for the dairy. They are almost always full-fleshed, easily kept so, and readily fattened when not in milk. The flesh is said to be fine-grained, tender, and sweet. A barren heifer in Minnesota weighed 1,680 pounds; a mature cow in New York, fattened for butcher, weighed 1,925 pounds, and made 1,515 pounds of beef. A pair of Swiss steers at 13 months old weighed 2,200 pounds. The calves are large, often 100 pounds at birth, and make a vigorous growth. Weights of 400 to 600 pounds at 4 to 6 months of age are not uncommon. Altogether, the Brown Swiss is able to present about as strong a claim as any breed to being a profitable "general purpose cow."

In their native country these cattle are ordinarily fed nothing but hay, grass, or other green forage, throughout the year, but they respond promptly to more various and generous feeding.

The Brown Swiss Breeders' Association in this country was organized in the year 1880 and has published three volumes of the Swiss Record. There have been 1,157 bulls and 1,714 cows registered (up to October, 1897), and it is estimated that 1,200 of these animals in all are now alive and owned by about 175 different persons, mainly in the States of Massachusetts, Connecticut, New York, Illinois, Wisconsin, Iowa, Minnesota, and Colorado.

Types.—Gilbo 720 was bred and owned in Illinois. This bull was placed first in his class at the State fair at Springfield in 1895, and was never exhibited afterwards. His likeness is from a photograph taken when $2\frac{1}{2}$ years old. He then weighed 2,150 pounds. The picture shows well the heavy frame, full flesh, strong muscles, and rugged appearance characteristic of this breed. The sire and dam of this bull were not show animals, but the dam gave 52 pounds (or 24 quarts) of milk a day with ordinary care, and the sire's dam when 10 years old gave an average of 65 pounds of milk, making $2\frac{3}{4}$ pounds of butter, for three days at the Fat Stock and Dairy Show, Chicago, in 1891.

Brienzi 168 was imported from Switzerland into Connecticut in 1882 and became the most noted cow of her breed in this country. More than this, she produced the largest quantity of butter fat in a day ever recorded in America at a public test. At the Chicago show mentioned above (1891) her average daily record for three days was 81.7 pounds of milk, containing 3.11 pounds of fat. This was equivalent to more than $3\frac{1}{2}$ pounds of butter per day. The likeness of the cow was made at that time. She was then 11 years old and weighed

1,410 pounds. She was shown at numerous State fairs between 1886 and 1893, and always took first premium in her class; this was her award at the Columbian Exposition. Calves of this cow of both sexes have also been first-prize winners at different ages at State fairs in Illinois, Iowa, and Missouri.

DEVONS.

Origin and history.—The peninsula which forms the southwestern portion of England is the home of a thrifty and attractive race of deep-red cattle, which take their name from the elevated region in the north of Devonshire, where they have been brought to the greatest evenness and fixity of type.

If solid color throughout and resistance to variation in all particulars be accepted as evidence of antiquity in a breed, the Devon must be regarded as among the oldest and purest. It certainly is one of the best defined of British breeds of cattle, although little is known of its origin. It was undoubtedly very gradually developed, but its greatest improvement since the record began has been at the hands of the brothers Quartley, Messrs. John T. and James Davy, and Mr. Coke, of Holkham, afterwards Earl of Leicester.

It is believed that Devons were among the very first cattle brought across the Atlantic, reaching New England on the ship *Charity* in the year 1623. Importations of some consequence were made in 1800, and to New York soon afterwards, but the first herd to be brought to this country and maintained pure, so that breeders can still trace to it, was a present of a bull and six heifers from Holkham, sent directly to Mr. Robert Patterson, of Maryland, and arriving at Baltimore June 10, 1817. This Patterson herd has been kept up during the greater part of the century. Other importations occurred in 1818, 1820, 1835, 1855, and frequently in later years.

Characteristics.—The characteristics of the Devon are compactness and general beauty, hardiness, activity, intelligence, docility, aptitude to fatten, and quality of milk. The prevailing red varies from a dark, rich color to pale chestnut, but no black or white is admissible excepting a little white patch on and in front of the udder, which sometimes extends forward on the belly, and white hair in the switch of the tail. The skin is yellow and unctuous, its richness being shown in an orange ring around the eyes and more or less of the same encircling the muzzle. The hair is soft, fine, and often curls closely on the necks, shoulders, and faces. "The head is adorned, in the case of the female, with particularly elegant, creamy-white, sharp-pointed, black-tipped horns of medium length, having a good elevation at the junction with the head and curving upward. In the bull the horns are shorter in proportion to thickness, straighter, and less raised." Straight, broad, level backs, roundness of form, fineness of bone, uncommon symmetry of outline, make up an animal of great attractiveness.

Devons are of medium size, being about equal to the Ayrshires in general average. Their docility, intelligence, and muscular activity, already noted, combine to make steers of this breed especial favorites as working cattle. Wherever working oxen are sought and appreciated, a common and justifiable ambition is to own a yoke of Devons.

These cattle thrive on meager pasturage and have shown remarkable adaptability to varied conditions of topography and climate. They do well in the most hilly and rigorous parts of New England and have proved well suited to the old field and pine lands of the Gulf States.

As milk and beef producers.—As a rule, Devon cows do not yield large quantities of milk and are not persistent milkers; yet some families, bred and selected for dairy purposes, have made fair milk records, single animals producing 40 and even 50 pounds per day. The milk of this breed is rich in quality, ranking next to that of the Channel Island cattle in percentage of butter fat, total solids, and high color, being in these respects well above the average milk of the dairy cows of the country.

While it is believed that the Devon is not commonly held in as high esteem in the United States either as a dairy cow or a general-purpose animal as is really justified by its merits, the best friends of this breed regard it as more particularly a beef producer. The calves are always fat and lusty, showing a vigorous growth, while cows and steers are easily kept in good order and fatten readily on demand. At the famous Smithfield Fat Stock Show of London the Devons have year after year won highest honors for butchers' meat. The beef is fine-grained, usually tender, and well marbled, and the fat of a deep yellow color, like the milk fat.

Capt. J. T. Davy began the publication of the Devon Herd Book in 1851, and animals bred and owned in America were for some years entered in that book. Indeed, American pedigrees recorded run back ten years further than the oldest published for English herds. In 1859, herdbooks were published simultaneously in England and America, and in March, 1863, the American Devon Herd Book, the first volume of a new series, appeared. This publication has been continued by the American Devon Cattle Club. The last volume of the herdbook issued was No. VI, in 1899. This shows the animals registered to be 6,716 males and 11,627 females—a total of 18,343. Of these, 10,000 are believed to be living, well distributed over the country, and in the hands of at least 900 different owners.

The preceding description relates to what may be regarded as the true Devon breed, although by some called the North Devon. This is to distinguish them from South Devons—a variation from the breed in its best form, giving a larger, coarser animal, not at all adapted to dairy uses.

Types.—Of the two animals selected to illustrate the Devon breed,

the bull was imported and the cow was bred and owned in Pennsylvania.

Fine Boy of Pound 6185 began his public career soon after importation, in 1893, when 3 years old, and has won first prizes at all

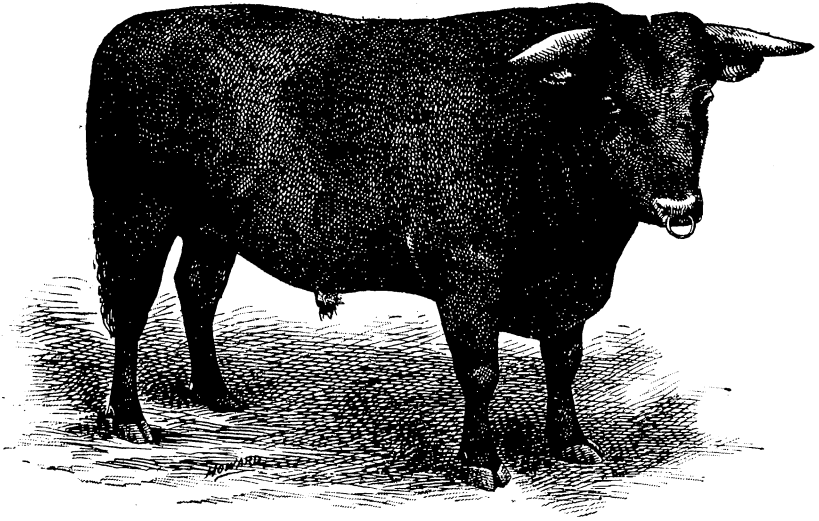


FIG. 5.—Devon bull Fine Boy of Pound 6185.



FIG. 6.—Devon cow Miss T 9605.

the principal fairs in the East and South. His sire took first honors and the Queen's cup once at royal shows in England. His progeny have furnished prize winners also, and his heifers are pronounced good milkers, although no special dairy records have been claimed

for them. The picture shows this bull at the age of 4, when weighing 1,850 pounds.

Miss T 9605 has also been a first-prize winner for several seasons at Eastern fairs, and has a show-ring record equaled by few cows. Her calves have also won premiums at State and other fairs. Her dam, Matchless P 4065, was a fine dairy cow, her ordinary milk yield being 30 to 35 pounds per day, and 20 pounds of her milk always gave a pound of butter. The likeness of Miss T was taken when she was 7 years old, and her weight was then 1,450 pounds. Although faithful in outline, the picture does not do justice to this fine animal.

DUTCH BELTED.

Origin.—The domestic cattle of Holland appear to have had a common origin, and the prevailing markings of all are black and white. The distribution of color differs, however, and one branch of this general stock has been so peculiarly marked for a century or two—some claim three—as to fix its name and secure recognition as a breed. What are known in Holland as “Lakenfeld” cattle are called Dutch Belted in this country.

Characteristics.—The animals of this breed are all jet-black, with a broad band or belt of pure white encircling the body. This belt or blanket differs in width, but rarely reaches so far forward as the shoulder blade or back to the hips. On cows the fore part of the udder is usually included. No white is admissible elsewhere on the body and no black within the white zone. In general conformation the cattle are of the dairy type, although not to such a degree as some others.

They are docile beasts and fairly hardy and vigorous in growth and action. In size they rank with the Ayrshire, although perhaps somewhat less blocky and with longer legs. Individuals are larger in frame, but not often heavier. This breed is not numerous either in Europe or America. A few specimens were brought to the United States in 1838, and for a long time there were more to be found in the famous dairying county of Orange, N. Y., than in all other parts of the country combined. They have become more scattered during recent years, and the interests of the breed are represented by the Dutch Belted Cattle Association of America. As milk producers these belted cows seem to give good satisfaction, although the milk is not above the average in quality. The claim of a leading breeder is that these cattle are “deep milkers, practical, profitable, thrifty, and picturesque in the extreme when seen as a herd at pasture.”

The association mentioned publishes a herdbook, of which five volumes have been issued, the last in 1897. A total of 1,128 cattle have been registered, including 331 males and 797 females. About 500 of these are believed to be still living, and they are mainly to be found in

the States of Massachusetts, New York, New Jersey, Pennsylvania, Ohio, and Michigan, and the property of about 60 owners.

Types.—The two animals illustrating this strikingly marked breed are the bull Duke of Ralph 255 and the cow Lady Aldine 124. Both are vouched for by prominent breeders as being good representatives

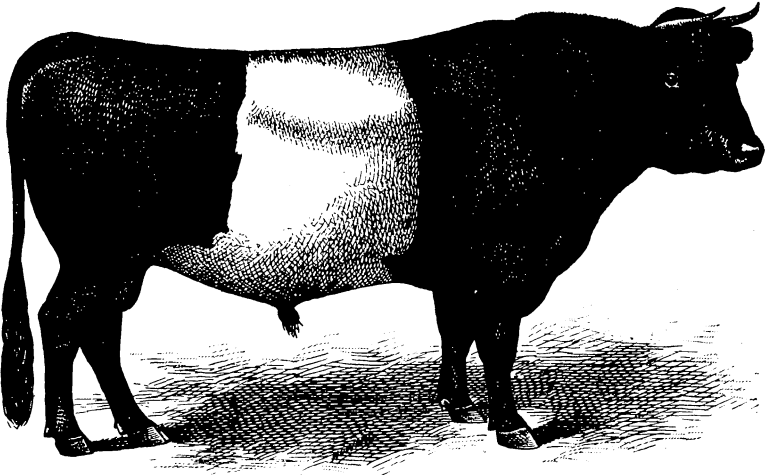


FIG. 7.—Dutch Belted bull Duke of Ralph 255.

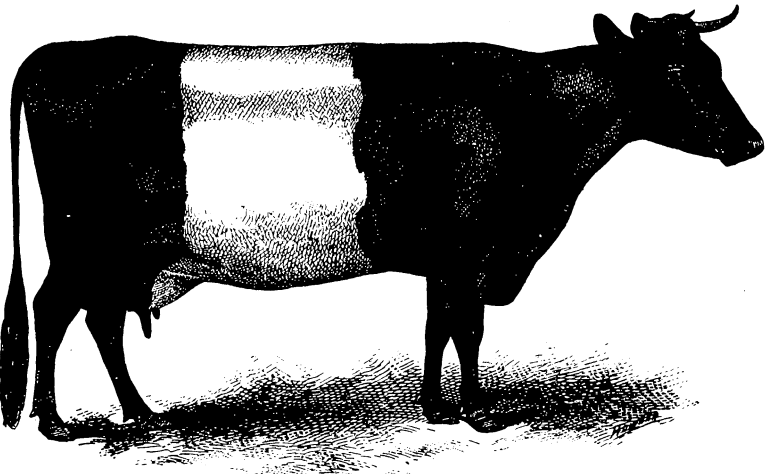


FIG. 8.—Dutch Belted cow Lady Aldine 124.

of Dutch Belted stock. The bull was 3 years old as shown in the picture, and then weighed 1,200 pounds. He came from a prize-winning family, although never himself shown in competition. His dam, Belle of Crumwold 308, won the first prizes at the New England and other fairs.

Lady Aldine came from the old Orange County strain, her sire

being Goshen 26, and her dam Elsie, who gave 32 quarts of milk a day for a week on grass alone. The likeness shows the cow at 7 years old, when she weighed 1,200 pounds. She was a first-prize winner at all the big fairs in Pennsylvania, New Jersey, and Delaware, and her progeny have won many honors at exhibitions. She was a vigorous and productive cow until 18 years of age.

GUERNSEYS.

Origin and history.—The island of Guernsey is the second in size of the Channel Islands, and lies farthest to the west in this group. It is triangular in shape, being 9 miles long and about 4 in greatest width, with rough, rocky coasts, containing 16,000 acres, and has a population of 35,000, half of whom live in the principal town, St. Peters. Market gardening is the chief occupation of the country people and dairy cattle form a secondary interest. There are only about 5,000 cattle owned upon the island. By a long-continued policy of excluding all live cattle from without its limits, the stock of this island has been built up into a distinct breed. The origin and history of Guernsey and Jersey cattle are practically the same, but in the development of the former more of the characteristics of the parent stock of Normandy, France, have been retained. At present, however, Guernseys can be better compared with Jerseys than with any other cattle.

It is difficult to say when Guernsey cattle began to come to the United States, but a few are known to have been owned near Philadelphia prior to 1850. In America, as in England, all Channel Island cattle imported were long called "Alderneys," irrespective of the island from which they came. Pure as they were at home, each within its own limits, the distinction was not properly preserved after they reached this country. But between 1870 and 1875 the Guernsey became recognized here as a breed, and for twenty years importations have been made nearly every year. The breed has steadily increased in numbers and as steadily has gained in favor wherever introduced.

Characteristics.—Guernseys are a size larger than Jerseys, stronger-boned, and a little coarser in appearance. They are claimed to be hardier and larger milkers, but both these points are stoutly disputed. They are generally very handsome and attractive cows.

The head of the Guernsey is rather long, the neck slender, the body large, deep, and rangy, the rump prominent, the flanks thin, thighs incurved, and twist open and roomy. Altogether the animal is at once recognized as businesslike and belonging to the pronounced dairy type. They are light in color, yellow and orange predominating, with considerable white, usually in large patches on the body and on the legs. Darker shades, approaching brown, are found upon some cows and are quite common on bulls. The muzzles are almost invariably buff or flesh-colored, surrounded by a fillet of light hair.

Occasionally a black nose is found, showing the influence of some distant ancestor from Brittany. The horns are small, curved, fine, thin-shelled, and waxy in appearance, often showing a deep, rich yellow for a third of their length from the base. A characteristic of this breed is a very generous secretion of yellow coloring matter, which pertains to the whole skin, but is seen especially where the hair is white, in the ears, around the eyes, and about the udder. This gives a "richness" to the animal which is very noticeable and causes the butter produced to be of a higher color at all seasons of the year than that of any other breed. The udder and teats are large and admirably shaped and placed, in selected specimens, but these and other dairy markings do not, throughout the breed, appear to be as fixed as in the case of Jerseys, which have been subjected to a longer course of careful breeding.

The Guernsey possesses a nervous temperament, and yet the cows are extremely quiet and gentle when properly handled, and less trouble is reported in the management of aged bulls than with Jerseys of like age.

Milk and butter records.—The cows of this breed produce liberal quantities of milk, and it is of uncommon richness in butter fat and in natural color. They are to be especially recommended for butter cows, as well as for market milk where quality secures a relatively high price, and they are noted for rich production combined with especial economy in feeding. They possess great power of assimilating food and converting it into milk, yet are delicate feeders rather than gross, and will not generally bear much forcing. The grades, offspring of a Guernsey bull and well-selected cows of no particular breeding, usually make very satisfactory dairy stock. Guernsey cows average 1,000 pounds in weight, or a little more, and thus, being heavier than Jerseys, they are expected to give more milk. Records show, however, that the annual milk yield of good herds of these two breeds, of the same number, is just about the same. At the Columbian Exposition at Chicago, in 1893, 20 of the best Guernseys which could be found in the country were carefully tested and compared for five months with as many Jerseys and Shorthorns. The result, so far as products are concerned, is given on page 46. At home, the average Guernsey cow is expected to produce 5,000 pounds of milk and 300 pounds of butter in a year without high feeding. In this country these cows are fed higher and produce accordingly. Large herds have made records above the island standard just stated. One herd of 104 animals of all ages gave 5,317 pounds of milk and 318 pounds of butter per head in a year. Seventeen 3-year-old heifers in this herd, in the year 1896, averaged 6,035 pounds of milk and 355 pounds of butter. Another herd, of 15 cows, made a record (1895) of 6,626 pounds of milk and 418 pounds of butter. Still another, of 10 cows, averaged 6,347 pounds of milk in 1896 and 350 pounds of butter. Single cows have ranged up to 8,000, 10,000, 12,000, and almost 13,000

pounds of milk in a year, producing 500 to 700 pounds of butter. One cow gave 48 to 52 pounds of milk a day and 7,000 pounds in ~~six~~ months—a rate of over 25 pounds of butter per week and over 800 pounds per year. These records show what the best animals can do under the most favorable circumstances. The mixed milk of this breed is often found to average 14 to 15 per cent of total solids and 5 to 6½ per cent of fat. One herd record shows that for eight years it required 17 pounds of milk, on an average, to make a pound of butter. The fat globules in the milk are relatively large and the cream separates easily.

On the island of Guernsey the beef of the native cattle is highly prized, and young animals are said to fatten easily at a profit. In the United States the friends of the Guernsey have laid no claim to its being a beef producer, and yet when an animal of this breed, if not too old, ceases for any reason to be profitable for the dairy, it is converted into beef without loss to the feeder.

The American Guernsey Cattle Club was organized in 1878. Volume IX is the current issue of the Guernsey Herd Register for 1899. This register includes the pedigrees of 5,600 bulls and 11,000 cows. Two-thirds of these are probably living, and they are to be found scattered throughout almost every State of the Union.

Types.—Sheet Anchor 3934, chosen as the male representative of the Guernseys, is a noted animal. Few have such a prize-winning record; he has never been beaten in the show ring. Yet both parents were almost as successful, and his get are following in the same lines, the females supporting their show honors by records of dairy performance. This bull is American bred, dropped December, 1891, but both sire and dam were imported. The former, Lord Stranford 2187, won first prize on the island of Guernsey in 1889, and first and sweepstakes at the Columbian Exposition in 1893. The dam, Bienfaitrice 4th 3657, was regarded as one of the best and most typical cows of her breed. After second calf she gave 41 pounds of milk a day. Sheet Anchor is a light yellowish red in color, with the white markings shown, and his skin is soft and pliable, with a wonderful golden hue, which shows through the silken hair on all parts of the body. The likeness shows him in his 4-year-old form, weighing 1,600 pounds, with long body, strong back and loins, ample constitution, dairy characteristics of the highest order, and fine style and finish. Heifers got by him have milk records ranging up to over 6,000 pounds per year, with 4½ to over 6 per cent average fat tests; one made 329 pounds of butter before her second calf.

Fantine 2d 3730 stands in the very front rank among Guernsey cows, and is an excellent type of her breed. She and her dam were both bred in this country, while her sire and both parents of dam were imported. The likeness reproduced was made when she was 8 years old and within a few weeks of calving; her udder is

shown not more than two-thirds filled. Her digestive capacity, good constitution, and strong dairy points are well shown in the engraving. At the age stated she made a record of 9,748 pounds of milk and 603 pounds of butter within eleven months. Her best day's yield was 47

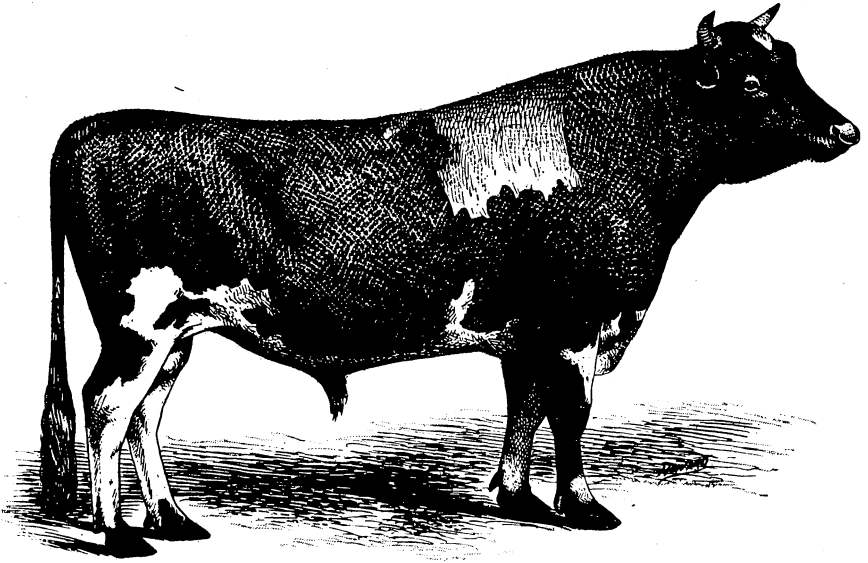


FIG. 9.—Guernsey bull Sheet Anchor 3034.

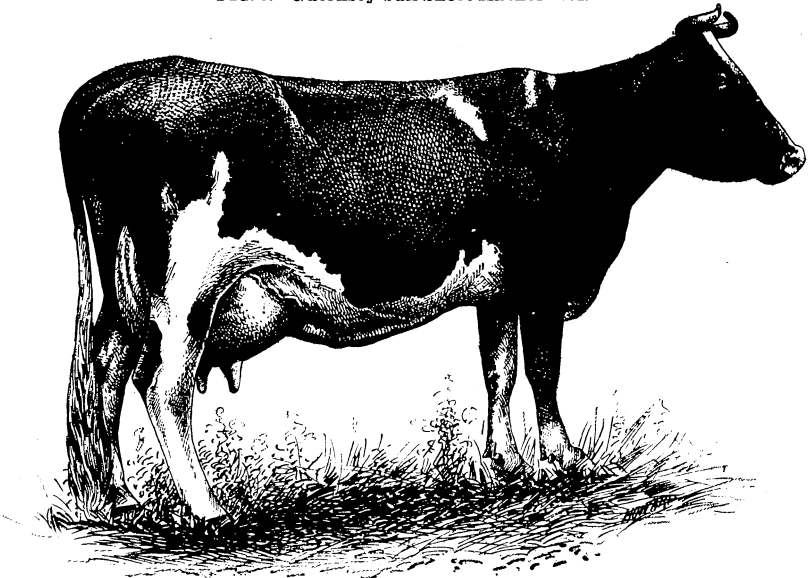


FIG. 10.—Guernsey cow Fantine 2d 3730.

pounds of milk, and her best month (the second—December) was 1,318 pounds of milk, containing 70 pounds of butter fat, equivalent to $81\frac{1}{2}$ pounds of butter. In four different months her milk yield was greater than her own live weight.

HOLSTEIN-FRIESIANS.

Origin and development.—The strongly marked black-and-white cattle of North Holland and Friesland constitute one of the very oldest and most notable of the dairy breeds. The historians of this race claim that it can be traced back for two thousand years continuously occupying the territory named and always famous for dairy purposes. Tradition has it that two ancient tribes located upon the shores of the North Sea before the beginning of the Christian era; one possessed a race of cattle pure white and the other a kind all black. Men and cattle then became amalgamated, forming the people and herds which for centuries have occupied that region. Holland has been noted for dairy products for at least a thousand years, and the great bicolored beasts upon which this reputation has been gained have been slowly but surely developing their present form of dairy excellence.

These cattle have been known by several different names, in both Europe and America. "Holland cattle," "North Hollanders," "Dutch cattle," "Holsteins," "Dutch-Friesians," "Netherland cattle," and "Holstein-Friesians" are all the same. There was sharp contention in this country before the last name was agreed upon and generally accepted. It seems unfortunate that the simpler and sufficiently descriptive and accurate name of "Dutch cattle" was not adopted.

The large frame, strong bone, abundance of flesh, silken coat, extreme docility, and enormous milk yield of the Holstein-Friesians result from the rich and luxuriant herbage of the very fertile and moist reclaimed lands upon which the breed has been perfected, the uncommonly good care received from their owners and the close association of people and cattle. The Roman dominion brought improvements in draining and diking, in methods of cultivation and of cattle breeding, but no mixture of blood occurred with the inhabitants or in their herds. "The preservation of the Friesian people and their continued adhesion to cattle breeding for more than two thousand years is one of the marvels of history. Always few in number, the conflicts of war and commerce have raged over and around them, yet they have remained in or near their original home, continuously following their original pursuits. Their farm houses are fashioned after the same general model; the one immense roof covers everything that requires protection. Here the cattle find shelter during the long and rigorous winter months. Here they are fed and groomed and watched for months without being turned from the door. Here the family is also sheltered, sometimes with only a single partition between the cattle stalls and the kitchen and living room. Everything is kept with a degree of neatness marvelous to those not accustomed to such system. The cattle become the pets

of the household. At the opening of spring or when grass is sufficiently grown they are taken to the fields and cared for in the most quiet manner. Canvas covers protect their bodies from sun, and storm, and insects. The grasses upon which they feed are rich and luxurious, and the animals have to move about very little to gather sufficient food. On the first appearance of winter they are returned to the stable and the simple round of the year is completed. This round is repeated until the cattle are 6 or 7 years of age, when they are usually considered as past the period of dairy profit and are sent to the shambles. The object is always to produce as much milk and beef as possible from the same animal. With this twofold object in view, selection, breeding, and feeding have been continued for ages." (Houghton.)

This condensed description of the origin, development, and home treatment of this breed of cattle goes far toward explaining the characteristics of the breed as seen in this country.

The early Dutch settlers in America undoubtedly brought their favorite cattle with them during the seventeenth century, and there are definite records of three or four importations prior to 1850; but the credit of first introducing this breed to America and maintaining its purity here is due to Winthrop W. Chenery, of Massachusetts. He made three importations between 1857 and 1862. The Messrs. Gerrit S. and Dudley Miller, of New York, followed in 1867, and soon thereafter numerous others brought animals of this breed in considerable numbers to the United States. They have increased rapidly by importations and by breeding, and are now to be found in nearly all parts of this country.

Characteristics.—The striking features in the appearance of this breed are the color markings of black and white and the large size of the animals of both sexes. The shining jet black contrasts vividly with the pure white, the fine, silky hair being upon a soft and mellow skin of medium thickness. In some animals the black predominates, and the white in others. Black has been rather preferred among American breeders, to the almost entire exclusion of white in some cases, yet a few very noted animals have been mainly white. The average animal carries rather more black than white, and the distribution and outlines of the markings are extremely irregular. The black and white are never mixed, the lines of demarcation being usually sharply drawn. In Europe there are still some red cattle in this breed, and occasionally a purely bred calf is dropped in this country with bright red instead of black, showing the influence of some remote ancestor; but none are admitted to the American Herd Book except those black and white. In size the Holsteins are the largest of all the dairy breeds. The big, bony frames are usually well filled out, and the chest, abdomen, and pelvic region are fully developed. It is difficult to prevent the males from becoming too fleshy for breeding ani-

mals, and the females, when not in milk, take on flesh rapidly and soon become full in form. The cows range in weight from 1,000 to 1,500 pounds, most of them being between 1,100 and 1,400, with an average of about 1,250 pounds. The bulls at maturity are very large and heavy, often above 2,500 pounds in weight. The head is long, rather narrow and bony, with bright yet quiet eyes and large mouth and nostrils. The horns are small and fine, often incurving, and frequently white with black tips. The ears are large, thin, and quick in movement. The neck is long, slender, and tapered in the cows, its upper line often quite concave. The back line is usually level, particularly with the males, and the hips broad and prominent; some have well-rounded buttocks, but a drooping rump is not uncommon. The legs appear small for the weight carried and are quite long; the tail is long and fine and a white brush is required. The udder is often of extraordinary size, filling the space between legs set well apart, extending high behind and fairly well forward, with teats of large size and well placed. Teats are sometimes cone-shaped and uncomfortably large and puffy where attached to the udder. The milk veins are usually prominent and sometimes remarkably developed. There is a more marked inclination toward the beef form among the bulls than among the cows; the latter are generally of the true dairy type.

In temperament these animals are quiet and docile, bulls as well as cows, and the bulls exceptionally so. They have great constitutional vigor. The calves are large at birth, almost always strong and thrifty, and they grow fast and fatten easily. They mature early, heifers reaching their full height at two and a half years and showing no growth after four or five years except the addition of flesh and fat. Animals of both sexes can be readily turned into very good beasts for slaughter at almost any age, but they lack depth in the loin and ribs and have not the finish and quality of the noted beef breeds. These animals are very large feeders and at the same time dainty about their eating. To do their best they must have an abundance of rich food without the necessity of much exertion to get it.

Milk and butter records.—These great black-and-white cows yield milk in proportion to their size. The breed is famous for enormous milk producers. Records are abundant of cows giving an average above their own live weight in milk monthly for ten or twelve consecutive months, and there are numerous authentic instances of daily yields of 100 pounds or more for several days in succession and 20,000 to 30,000 pounds of milk in one year. Cows giving 40 to 60 pounds (or 5 to 7 gallons) per day are regarded as average animals; 7,500 to 8,000 pounds per year is depended upon as a herd average. A known record of 11 cows from 3 to 8 years old is 11,286 pounds (or 5,250 quarts per cow), the average milking period being three hundred and forty-one days. Another herd of 12 cows averaged 8,805 pounds a year (or 4,064 quarts) for four years. The milk of these very large producers is gener-

ally pretty thin, low in percentage of total solids, and deficient in fat. The cows have been favorites for dairymen doing a milk supply business, but in numerous cases their product has been below the standards fixed by State and municipal laws. On the other hand, there are some

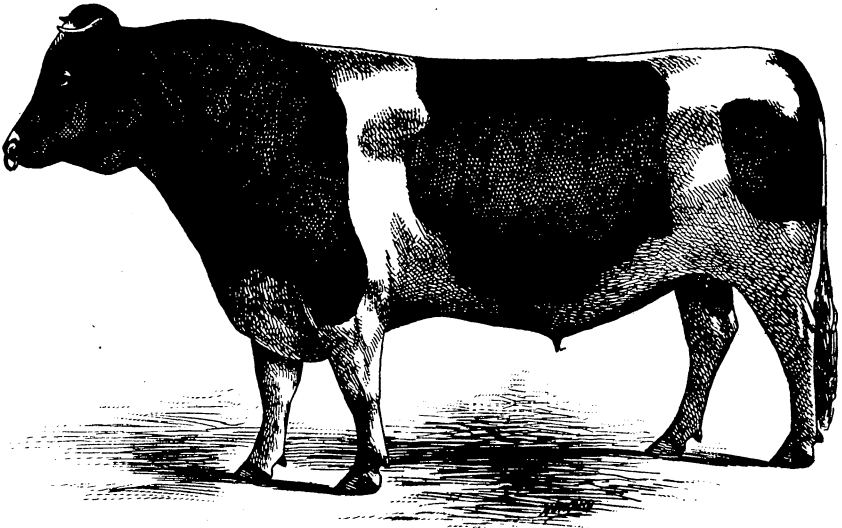


FIG. 11.—Holstein-Friesian bull De Brave Hendrik 230, H.-F. H. B.

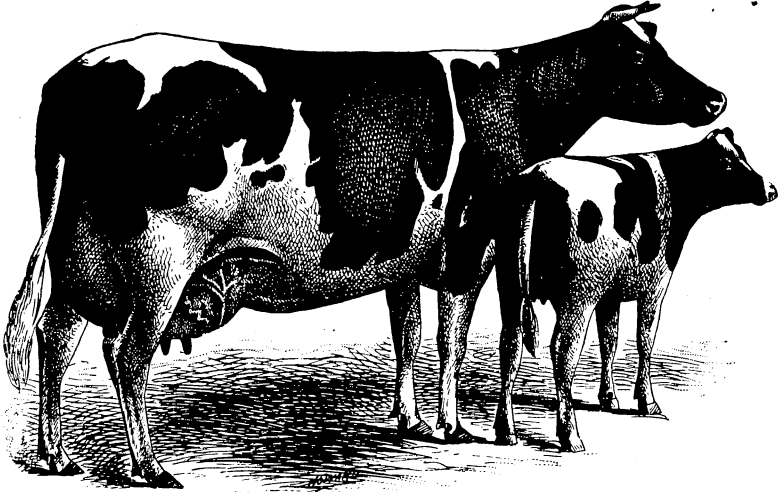


FIG. 12.—Holstein-Friesian cow Jamaica 1336, H. H. B., and calf.

families of Holsteins, and single animals are numerous, which give milk of more than average richness and show themselves to be profitable butter producers. Cows have frequently made from 15 to 25 pounds of butter a week, and 30 pounds in a few cases. Entire herds of good size have averaged over 17 pounds a week; a few cows have

records of 90 pounds, and one almost 100 pounds, in a month. One of the herds already referred to averaged 308 pounds of butter per cow annually for four years, and there are several yearly herd records of over 400 pounds per head; also single records of 500 and 600 pounds, and one is claimed of 1,153 pounds of butter in three hundred and sixty-five consecutive days. A cow bred and raised in Texas made a remarkable record there, when 5 years old and weighing 1,350 pounds; she gave $707\frac{1}{2}$ pounds of milk in seven days, which produced 22 pounds of butter, and in one month 2,958 pounds of milk containing fat equivalent to 86 pounds of butter. Holstein milk is characterized by fat globules of small and uniform size, separating slowly by the gravity method of creaming, and carrying very little color.

The breeders of "thoroughbred Holstein cattle" in America organized in 1872 and compiled the first herdbook. This was three years before any such published pedigrees appeared in Netherlands, the home of the breed. In 1877 another association of breeders formed and started the Dutch-Friesian herdbook. After a long and bitter contest these two organizations happily compromised and united their names and records as the Holstein-Friesian Association of America. The secretary of the association is editor of its register (a monthly journal) and of its herdbook. The sixteenth volume was published in 1899, and brought the recorded pedigrees up to 24,639 for bulls and 46,434 for cows. Previous issues of herdbooks upon this breed comprise nine volumes of the Holstein Herd Book, containing 15,364 bulls and 10,560 cows, and four volumes of the Dutch-Friesian Herd Book, containing 730 bulls and 1,937 cows. This makes a total registry of nearly 100,000, and it is estimated that half of these pure-bred animals are now alive in the United States. Although they are well distributed throughout the whole country, the animals of this breed are owned in greatest number in the States of Massachusetts, Connecticut, New York, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Nebraska, Kansas, Texas, Colorado, and California.

Types.—It happens that both the selections for illustrating this breed represent imported animals and consequently comparatively little can be told about them and their immediate ancestors. It would be easy, however, to find many equally good types among American-bred Holsteins. Indeed, it is believed that in respect to size and dairy quality, the best animals of this breed in the United States are superior to those of their native country. De Brave Hendrik 230, H.-F. H. B., was dropped in North Holland in March, 1880, and during the years 1882, 1883, and 1884 won high prizes at Alkmaar, Gouda, and (first) at the great International Exhibition at Amsterdam. In March, 1883, he was designated by an official committee as the best bull in north Holland. He was imported in 1884 and owned in Pennsylvania. The likeness shows him as 4 years old, and he then weighed 2,300 pounds.

This bull came from a great milking family, and the females sired by him proved uniformly excellent as dairy animals.

Jamaica 1336, H. H. B., was dropped in Friesland in 1880 and imported the same year to Orange County, N. Y. She had her first calf in December, 1882, and during a milking period of three hundred days gave 7,450 pounds of milk. Her second calf was dropped in December, 1883, and when one month in milk she had exceeded all known records for her age, and this upon the ordinary ration for milkers in the herd. Her feed was then carefully increased until she gave 73 pounds of milk a day, in January (1884), and a total amount of 2,026 pounds during that month. The milk yield continued to increase during February, notwithstanding unusually cold, rough weather, until she reached the maximum of 112 pounds 2 ounces of milk on the 2d of March, when she was 4 years old. She gave 535 pounds of milk in five days, 1,034 pounds in ten days, 2,102 pounds in twenty-one days, and almost attained an average of 100 pounds a day for a month.¹ In four months Jamaica gave almost 10,000 pounds of milk, and about 20,000 pounds during this her second milking period. From her milk for a week 23½ pounds of butter were made. The average of grain fed to the cow during her greatest yield was 28 pounds, costing 30 cents, with an abundance of cut beets and good hay, and she had access to spring water in the stable yard five or six times a day. She received no silage, slops, stimulating food, or drugs. Jamaica was of medium size for her race, handsomely marked, vigorous, and very stylish, as shown by her likeness. This was made about the time of her famous test; she then weighed 1,192 pounds. Her owner was offered \$15,000 for this cow and her heifer calf, shown in the picture, before her milk yield reached 100 pounds a day. After her great performance this offer was increased to \$25,000, and \$10,000 was refused for the calf alone.

JERSEYS.

Origin and history.—Lying in the English Channel, 30 to 50 miles from the southern extremity of Great Britain, is an interesting group of islands, the largest of which, but 13 miles from the coast of France, is the Island of Jersey. It is 11 miles long and less than 6 miles wide, being an irregular rectangle in shape, about the size of Staten Island, in New York Harbor. High rocky cliffs bound its coast on the north and west; thence the surface slopes gradually to the south, with valleys and plains of some extent. This is the home of one of the most important and widely distributed of the dairy breeds of cattle. The island was known by the Romans as *Cesarea*, and it is supposed that "Jersey" is a corruption of that name. Although one of the oldest

¹The writer lived in the vicinity and verified the yield of this cow several days during the month; she was milked every eight hours, and there is no question about the accuracy of the record.—H. E. A.

and most loyal parts of the British Empire, this island, with its 60,000 inhabitants, is in appearance as much French as English, the curious dialect used by most of its people being old Norman. The foundation of the race of cattle developed here was probably the stock of Normandy and Brittany. But early in the eighteenth century steps were taken to prevent outside cattle coming to Jersey, and in 1779 a law was made, which has since been rigidly enforced, prohibiting under heavy penalties the landing upon the island of any live animal of the bovine race. Jerseys have therefore been purely bred with certainty for a longer time than any other breed of British origin.

The arable land of the island is in the hands of about 2,000 owners. The holdings vary from 3 to 30 acres, and herds exceeding a dozen cows are very rare. The soil is extremely fertile and its productiveness is enhanced by mildness of climate; the mean temperature of the year is 51° F. and the average rainfall is 30 inches. The ordinary yearly rental of land is \$50 to \$100 per acre. Extensive pastures, therefore, can not exist, and land and grass are so valuable that cattle are never permitted to roam at large. From time immemorial the custom has been to tether all animals, and they are moved several times a day. They are always led instead of being driven, and the handling is largely done by women. The cows remain out of doors the greater part of the year and are often milked in the fields. Very little grain is fed, but in addition to grass and hay the cattle are liberally supplied with roots, chiefly parsnips, which are abundantly grown for this purpose. Under these conditions a race of highly organized, delicate, and gentle cattle has been developed. It is at the same time a race of inherent constitutional vigor and peculiarly free in its island home from contagious, congenital, and other diseases.

A few Jersey cattle, then generally known as Alderneys, were brought to the United States prior to 1840, but importations did not become active until after the middle of the century. Connecticut, Massachusetts, and New Jersey led in introducing this breed to America, and from 1860 to 1890 importations were very numerous. Year after year the little home island exported 2,000 animals or more, nearly all coming to this country. Jerseys have been so numerous imported, have increased so rapidly in America, have been so largely used for grading, and have proved so remarkably well adapted to a wide range of climate, that the characteristic markings of no other breed can be so frequently seen wherever dairy cows are kept, from the St. Lawrence to the Gulf, and from ocean to ocean.

Characteristics.—Jerseys are the smallest in average size of the noted dairy breeds, cows ranging from 700 to 1,000 pounds and the bulls from 1,200 to 1,800 pounds. Yet the highest weights stated are often

exceeded, and where effort has been made to build up a herd of larger size an average of over 1,000 pounds for mature cows has been easily attained. The average weight of Jerseys in America is considerably more than the average on their native island. In color this breed varies more than any other. For a time there was a craze for "solid-colored" animals in this country, and many persons have the idea that no pure Jersey has white upon it. This is entirely erroneous; all of the animals of the earliest importations were broken in color. There have always been such among the most noted cows, and at the present time few breeders object to white markings, if high dairy quality is maintained. At one time a careful examination of the foundation stock on the Island of Jersey showed that but one cow in ten was solid colored. The proportion is greater in the United States, but there are pure registered Jerseys of all shades of brown to deep black, and of various shades of yellow, fawn, and tan colors to a creamy white; also mouse color or squirrel gray, some light red and a few brindle. With all these colors and shades there may be more or less white, in large patches or small, and on any part of the animal. Bulls range much darker in color than cows. But there are always signs or markings about a pure Jersey or a high grade, or something in its appearance, hard to describe, by which the blood is unmistakably shown.

The head of the Jersey is small, short, broad, lean, and generally dished. The muzzle, including underlip, is black or a dark lead color, surrounded by a mealy fillet of light skin and hair. The eyes are wide apart, large, bright, and very prominent; the horns small, waxy, with thin shells, often black tipped and often much crumpled; ears small and delicate; neck small, clean, and fine; legs the same, and rather short; body well rounded, with capacity for food and breeding; tail long and fine, with a full brush often reaching to the ground. The skin is mellow and loose, with fine, silky hair. The udder is of good size, more pendulent than in the Ayrshire, and with quarters more distinctly defined; teats sometimes small and conically inclined, but udder and teats seem to be easily improved by judicious breeding. The square, close, "Ayrshire udder" is frequently well-nigh perfect; milk veins highly developed, sometimes tortuous and knotty. This breed is second only to the Guernseys in the abundant secretion of coloring matter, which shows itself on the skin on various parts of the body, makes the fat of the body a deep orange, gives a rich tint to milk and cream, and a strong golden hue to the butter. Jerseys are irregular and sharp in outline, being picturesque rather than symmetrical, with the spare habit of flesh which is deemed favorable to dairy quality and enough muscular development for healthy activity and full digestive force. They are light, quick, and graceful in movement. Those of certain coloring are spoken of as "deer-like" in appearance and action.

Jersey cattle are of the nervous order of temperament, highly developed. They are excitable for cause, but the females, when properly treated, are exceedingly placid and docile. The bulls have the reputation of being fractious and difficult to handle after attaining maturity. This is largely a matter of early training and judicious management. Although naturally active and disposed to self-assertiveness, good managers find no trouble in keeping Jersey bulls under perfect control throughout long lives. Owing to greater range, variation, and rigor of climate, and perhaps rougher usage, the animals of this breed, reared for generations in America, have become larger, stronger-boned, and more robust than on their native island. As dairy animals they are also decidedly superior to their island progenitors.

Milk and butter records.—For scores of years Jerseys have been bred especially and almost exclusively for butter. There was no demand for milk on the home island, and the whole effort was to increase richness and add to the product of butter. In America breeders have striven with success to increase the milk yield, while maintaining its high quality. Two, three, and four gallons per day are common yields, and these cows are noted for persistence in milking, making a long season of profit, with great evenness of product until near its close. Herd records are numerous. Ten selected as having average dairy farm conditions include 140 cows and cover six years. The annual milk product per cow was 5,157 pounds, yielding 293 pounds of butter. Among these was one herd of 25 cows of all ages with a continuous record of seven years. The annual average per cow was 5,668 pounds of milk and 342 pounds of butter. Several herd records for shorter periods show average yields of 6,000 and 7,000 pounds per cow. Single animals are on record as producing 9,000, 10,000, 12,000, and at least two nearly 17,000 pounds of milk in a year. The characteristic of the milk of this breed is a high percentage of total solids, especially fat; 4 to 5 per cent of fat is a usual rate, in many instances higher. Jersey butter records are correspondingly large. Good herds are depended upon to produce 350 to 400 pounds of butter for every milking animal fed the full year. Individual cases are recorded by the hundred of cows making 15 to 20 pounds of butter in a week, and there are numerous weekly records of 25 to 30 pounds and more. Several tests with single animals have resulted in 600, 700, 800, and even 1,000 pounds of butter within twelve months. The butter fat in Jersey milk is in globules of uneven size, but mostly large—larger than with other breeds—and hence easily separated. The natural milk of cows of this breed is often too rich for their own calves, and it generally needs to be diluted when used for infants.

Jerseys are heavy feeders and have great capacity for assimilating and turning to profit all kinds of cattle forage. As a rule, they will bear rich feeding and forcing for long periods uncommonly well. In the good animals all the extra food is converted into milk. They do

not fatten readily. The Jersey cow is essentially a machine for producing milk—butter-making milk—and may be considered worthless when she ceases to give milk. The owner should depend for profit solely upon the produce of the cow while she is alive. Yet Jersey

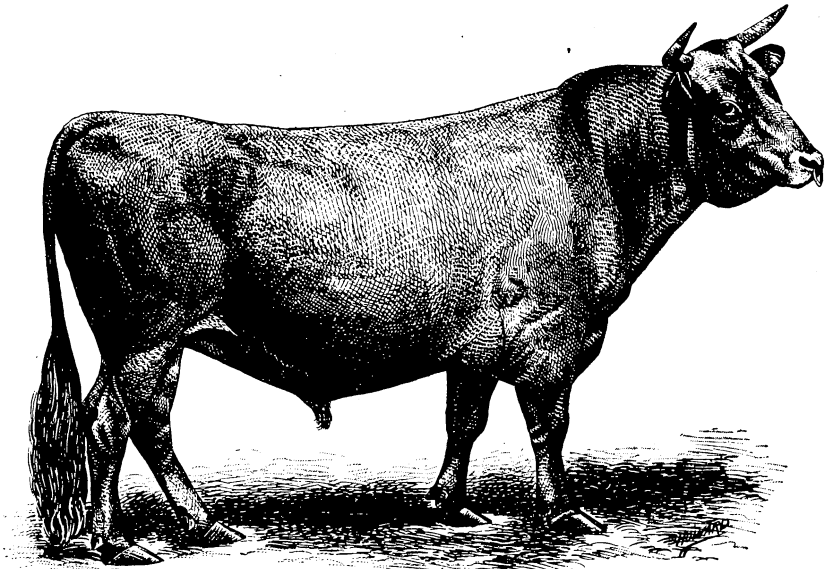


FIG. 13.—Jersey bull Pedro 3187.

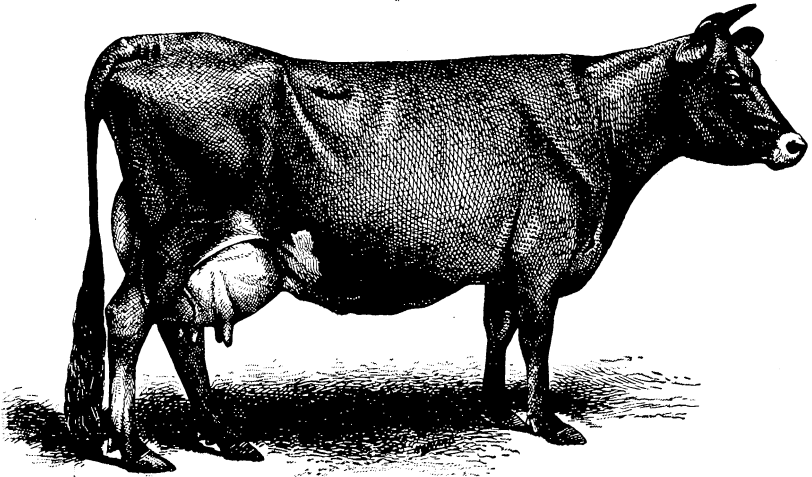


FIG. 14.—Jersey cow Brown Bessie 74907.

steers and an occasional nonbreeding female have been found to take on flesh at a profit and make small butchers' beasts, with fine-grained, high-flavored flesh, very rich in color.

Breeders on the island of Jersey commenced the compilation of a
6321—No. 106—3

herdbook in 1866, and a like association began similar work in this country the same year. The American Jersey Cattle Club was organized in 1868 and published the first volume of its Herd Register two years later. This is a strong organization, maintaining a business office in New York City. Volume 50 of its Register was published in 1898, bringing the recorded pedigrees up to 52,000 for males and 132,000 for females. It is estimated that there are 90,000 registered Jersey cattle alive in America, besides thousands pure although not registered, and hundreds of thousands of grades. The blood of this breed is more generally diffused and more highly prized than any other in the active butter-producing districts of the United States and among family cows in the country at large.

The illustrations of Jerseys represent two of the most famous animals of that breed.

Types.—Pedro 3187 was the second of several noted sons of the great cow Eurotas 2454,¹ having an authentic record of 778 pounds of butter produced in less than a year without forced feeding. Pedro was bred in New Jersey. His likeness is from a photograph by Schreiber. The bull was then 10 years old and weighed 1,760 pounds. His body color was gray, with very dark shadings, almost black, on head, neck, and quarters. He won numerous honors at important fairs, individually and through his get, the climax being reached at the Columbian Exposition, when he was 16 years old. At this most remarkable contest in the history of the breed, Pedro won first prize in his class, led the first-prize herd, and took the sweepstakes for Jersey bulls. Several of his get won honors in the younger classes, and the first-prize "young herd" were "all Pedros." This bull has 45 tested daughters, 33 of them having butter records averaging over 18 pounds in seven days, and 10 2-year-olds average 15½ pounds a week. While a young bull, Pedro was sold for \$10,000 and proved to be a bargain at this price. The constitutional vigor of the animal is shown by his likeness and by the fact that he sired 138 registered sons and 120 daughters, besides others not recorded. He was in effective service until within two months of his death, which occurred in August, 1896, when almost 19 years old.

Brown Bessie 74997 became famous as the champion butter cow in the dairy tests, open to all breeds, at the Columbian Exposition (1893). She was in her prime at this time, 8 years old, and weighed 1,040 pounds. The likeness given is drawn from a photograph by Schreiber, taken while the cow was at Chicago. She was a Western animal, bred and raised in Iowa and Wisconsin, and later owned in Massachusetts. She was a rich brown in color, with a few white markings, as shown. Her body was long and deep, with great

¹ This cow furnishes an example of the impress which one animal may make upon a breed. Eurotas had 8 bull calves, which all reached maturity and became collectively the sires of 365 males and 449 females, registered.

storage capacity, and her milking parts and dairy points generally were of the best. During the public tests mentioned, under very unfavorable conditions, this cow averaged over 40 pounds of milk a day for five months, her total yield being exceeded (by 70 pounds) by only one of her seventy competitors. She made 3 pounds of butter a day several times, $20\frac{1}{2}$ pounds a week, and 98 pounds more than any other cow in the entire test. Brown Bessie had a daughter and a full sister having butter records of over 20 pounds a week. Besides these, there are numerous other cows of record closely akin to her. She is one of a famous butter-making family; one grandsire was Combination 4389, and his grandsire was Sarpedon 930, also the grandsire of Pedro 3187. There are other noted dairy animals in this cow's pedigree, and the producing qualities of the get of her sons are adding to her reputation.

POLLED DURHAMS.

Origin and history.—This is the only breed of cattle, if it may yet be called a breed, which has originated in America; but its foundation lies away back in the dawn of history regarding domestic cattle in England. At the time the earliest definite knowledge of improvement in the cattle of Great Britain begins the middle counties formed the scene of activity, and “the district of Craven, a fertile corner of the West Riding of Yorkshire, bordering on Lancashire,” seems to have been the place where the first decisive work was done which laid the foundation for a great race of cattle. The farmers of Yorkshire were well ahead of the rest of the country two or three centuries ago in their ideas of cattle improvement. The first group, or perhaps breed, to receive distinction and a name were the Longhorns. Their horns were as long as those of the typical Texan steer, but were drooping instead of erect.¹ The result of the next marked epoch in English cattle breeding was the Durham breed, which, by contrast with preceding favorites, were named Shorthorns. Another century has passed, and between “sports,” selection, and artificial means, American breeders have been able to separate from the general Shorthorn stock a family retaining all the other features of that race, but with no horns at all. These are called Polled Durhams, and have become so fixed in type and in the potency of the hornless feature that they have been allowed a name and place as a distinct breed. It has taken shape within two or three decades, and one chary of new breeds is somewhat startled to find that animals registered as Polled Durhams are also admitted to the American Shorthorn Herd Book. Although thus

¹ Mr. Pitt, writing two hundred years ago, mentioned the Longhorns of Yorkshire as giving milk that would produce more cheese and butter than that of any other cows known; and he told of 2 oxen fatted in 1794, and much alike, one of which dressed 1,988 pounds for the four quarters, besides 200 pounds of tallow and a hide of 177 pounds.

largely of Shorthorn blood, the old familiar "muley" cow of the "native" stock of the country, often a brindle in color, was used to a considerable extent in the early work of building this breed and breeding out the horns. But, having served its purpose, this common blood is now rather despised, and one of the requirements for entry of animals in the American Polled Durham Herd Book is that after the year 1899 females shall carry at least 96 $\frac{1}{4}$ per cent of Shorthorn blood, unless their parents are already registered. Besides this, they must have the "color and markings characteristic of the Shorthorn," but must be hornless. This branch or family of the Shorthorn breed—for that is what it is—was developed mainly in Ohio, and is best known in the valleys of the Ohio and Mississippi and in States to the westward.

Characteristics.—As to size, color, and general appearance, the Polled Durhams answer perfectly to the description of the typical Shorthorn of the beef form (see later pages), without the horns. Red is the color preferred and prevailing. They should be, and usually are, classed as belonging to the beef breeds; yet so many animals of dairy excellence appear among them that they deserve this mention. One of their most careful breeders and earnest champions says of them: "They have the contour and general make-up of the grand old breed from which they have been mainly builded; besides, in their development the milking qualities have not been lost sight of, and among them are some excellent milkers."

In their dairy capacity they may also be said to practically duplicate "the milking Shorthorns," so that a separate description is unnecessary. The breed is not yet sufficiently strong in numbers and has not been handled enough for dairy purposes to furnish milk records of value for herds or single animals. In short, they have been from the first, and continue to be, bred primarily for the development of feeding quality for beef production as their dominant characteristic, and their service as milk producers must be regarded as a secondary consideration. It remains still to be determined to what extent this breed will affect the interests of dairymen. At the Columbian Exposition (1893) the Polled Durhams were entered as "general-purpose" cattle, and in the sweepstakes rings for that class they received the highest honor in competition with representatives of several other breeds of similar character.

Breeders of these animals organized in the year 1889 as the American Polled Durham Breeders' Association and at once began the compilation of a herdbook. The association has 116 members and has published one volume, containing the entries of 487 bulls and 834 cows. It is estimated that the breed comprises a total of 1,200 living animals, mainly owned in the States of Ohio, Indiana, Illinois, Iowa, and Kentucky.

Types.—Young Hamilton 49, a good type of the male Polled Durham,

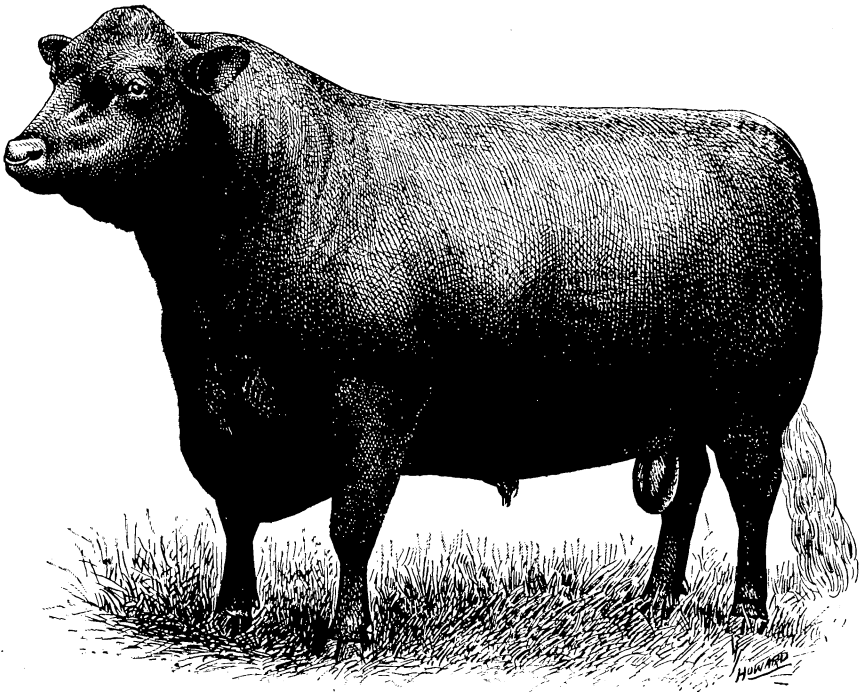


FIG. 15.—Polled Durham bull Young Hamilton 49.

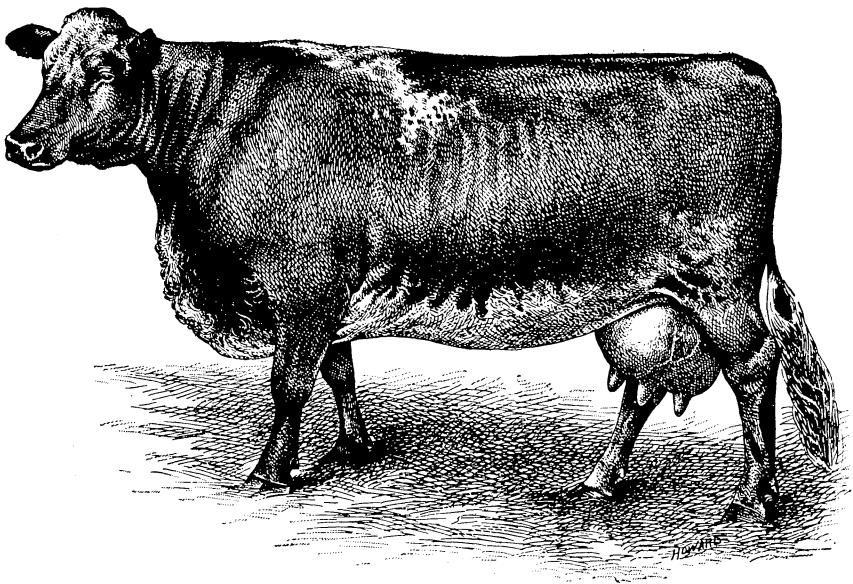


FIG. 16.—Polled Durham cow Daisy 2.

was bred in Ohio, and at the time his likeness was made he was 4 years old and weighed over 2,700 pounds. He was of a dark-red color with no white markings. His sire and dam are both recorded in the American Shorthorn Herd Book; whether either of them was without horns is not stated. This bull was the first-prize animal in his class at the Columbian Exposition, won the breed sweepstakes, and led the herd which won grand sweepstakes for general-purpose cattle. His get have been very successful show animals. "His daughters are a fine type of beef animals and regarded good milkers, but they have no dairy records."

Daisy 2 was bred and raised in Illinois and was one of the foundation animals of this breed. She was "strawberry roan" in color, old-fashioned Shorthorn marking, and was an uncommonly handsome and showy cow. She was also, as her picture indicates, an excellent milch cow, giving at times 24 quarts of milk a day. At her best she weighed 1,400 pounds and was a very easy keeper. One of her calves won first prize at the Columbian Exposition in 1893.

RED POLLS.

Origin and history.—This is another of the comparatively new breeds, as its independence has only been recognized within the last half of the nineteenth century, and it is another without horns. Red Polled cattle resemble the Devons almost as closely as the Polled Durhams resemble the Shorthorns. Yet the two red races are probably not closely related; the Devons are natives of the Dartmoor region in the southwestern portion of England, and the Red Polls had their origin on the eastern plain, north of the river Thames, and particularly in the counties of Norfolk and Suffolk. The progenitors of this breed were "the little, old, red, horned cattle" of Norfolk and "the dun, or mouse, colored polled animals" of Suffolk. According to very early records, the latter were superior milch cattle. Arthur Young, in his *Survey of Suffolk*, published in 1794, mentions the hornless cattle of that country and says: "There is hardly a dairy of any consideration in the district that does not contain cows which give, in the height of the season, 8 gallons of milk a day, and 6 are common among many for a large part of the season. For two or three months a whole dairy will give 5 gallons a day on the average." And he adds: "Many of these beasts fatten remarkably well and have flesh of fine quality." Low, writing in 1845, after giving the breed, under the name of Polled Suffolks, a poor character in respect to almost everything except milking powers, suggested the probability of its immediate extinction. But since that time much enterprise has been shown among the cattlemen of that part of England. The early stock of Norfolk and Suffolk has been merged (from about 1846), handled with skill, the horns eliminated on the one side, and all color but red upon the other. The traces of an infusion of Scotch Galloway and West Highland blood,

doubtless once made, has been well covered, and the Red Polled cattle have now recognition as a breed and come well to the front. They have not made much headway in Great Britain, however, outside of the two counties named.

Some of these hornless cattle, red and of other colors, were among those brought to the early English colonies in America, and the so-called "muley" cows among our natives are probably descendants, more or less mixed with other strains, including the Scotch Galloways, of these early arrivals from Norfolk and Suffolk. But the first notable importation of the breed in its modern form was made in the year 1873 by Gilbert F. Taber, and this herd, to which he added in 1875 and 1882, was maintained for some years in Putnam County, N. Y. A number of importations to the United States have since been made, and the State of Ohio has lately been the center of active interest in making these cattle known in this country.

Characteristics.—The animals of this breed are about the same size as Devons, and, being of the same color and of the beef form, the resemblance is still greater. The absence of horns and the change thus caused in the shape of the head, which assumes a comparatively high and sharp crown, or poll, with a tuft of hair upon it, is the only noticeable distinction. The development of the milking parts has been better maintained in the Red Polls, so that at present their udders, teats, and milk veins show the better. In the matter of teats this may have been overdone, as with the Polls these are often unduly large, puffy, and conical. While red is the required color, it is permissible to have a white tip to the switch and some white upon the udder, although the latter is deemed undesirable. The Red Polled cattle are strong in constitution, hardy, good grazers, active in movement, and quiet in disposition.

In general appearance the animals of this breed are of the beef type—blocky, round, full, smooth, and fine-boned. Their aptitude for making meat seems to be greater than for making milk. Their special friends claim them to be good at both, and press their merits strongly as the general farm cow. It is needless to present here the proofs of their excellence as butchers' beasts.

Milk records.—As dairy animals the Red Polls must be placed in the second class with the other breeds which aim to serve the dual purpose. They appear to give rather more milk than Devons on the average, but not quite so rich in quality. Being comparatively few in number in this country, dairy records of entire herds in the United States are lacking, and the available figures mainly pertain to records in Great Britain. Good herds there average 5,000 to 5,500 pounds of milk annually per cow, and when small and selected occasionally rising to 7,000 pounds. One record is claimed of 7,744 pounds each for 22 cows. In the year 1896 twelve herds reported 253 cows with an average yield of 5,786 pounds. Single selected cows give 30, 40, and sometimes 50 pounds

of milk a day, and hold out well, making yearly totals of 6,000 to 8,000 pounds or more. One record is published of a 12-year-old cow giving 14,189 pounds of milk in a year. It must be admitted, however, that the tendency in this country among owners of these cattle is to add

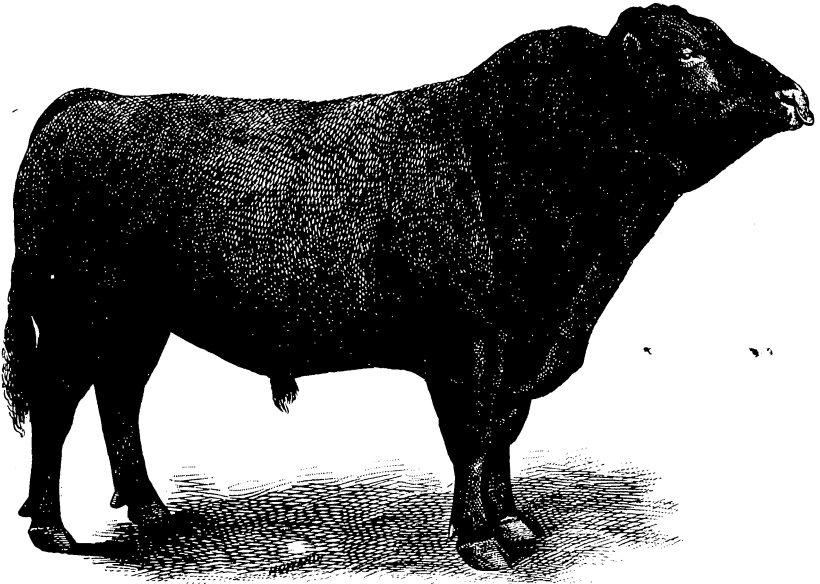


FIG. 17.—Red Polled bull Dobin 3462.

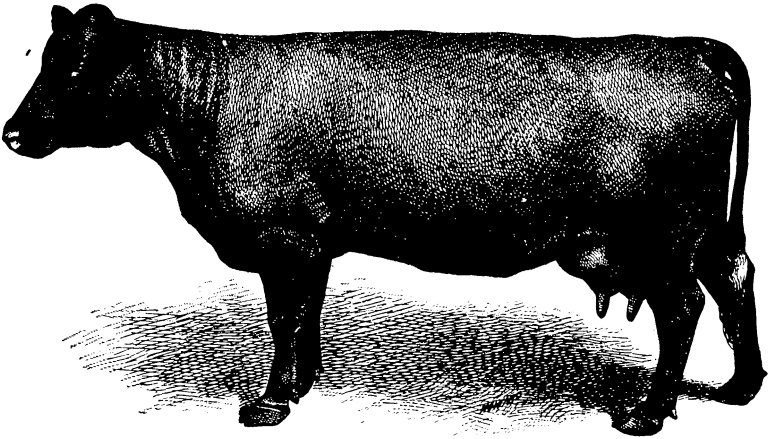


FIG. 18.—Red Polled cow Beauty 5th 2629.

to the size and beauty of contour of their animals and improve the beef-producing capacity at the expense of dairy qualities.

The first herdbook for this breed was published in England in 1874, and in 1883 the Red Polled Cattle Club of America was organized, and issued its first volume in 1887. A few years later the English and American associations united their herdbooks, which have since been

a joint issue, all animals of the breed in both countries being registered together. This is the only instance of its kind among the pure-bred cattle organizations of this country. Ten volumes of the joint herdbook have been published, the last in 1898, and the total records comprise 5,959 males and 13,109 females. The American data can not be separately given, and no estimate is made of the number of Red Polls alive on this continent. The total is small, and they are held mainly in the Central and Western States.

Types.—Dobin 3462 was bred in Wisconsin, and both sire and dam were bred in this country. At the time the accompanying picture was made the bull was 6 years old and weighed 2,150 pounds. He is regarded as a typical bull of his breed and has been a winner at several of the important State fairs of the Northwest. No dairy records have been made by his dam or by his daughters.

Beauty 5th 2629 was bred in Vermont, both her parents being imported, and was afterwards owned in Ohio. The likeness shows her at 5 years old and weighing 1,250 pounds. She was a successful show animal in Ohio and Missouri and a good dairy cow, giving about 7,000 pounds of milk a year of more than average richness. She died of milk fever in 1890.

SHORTHORNS.

Origin and history.—The cattle which have been most famous as a breed in England and America, which have received the longest and closest attention of breeders and improvers, which have commanded prices, singly and in herds, far above all others, and which have made the most general impression upon the live stock of both countries during the nineteenth century, are the Shorthorns, or Durhams. Wallace says they are descended from the old Northeast of England breed, variously designated as "Durham," "Teeswater," "Yorkshire," and "Holderness," and adds: "The breed was probably originally formed, though perhaps several centuries ago, by crossing the aboriginal British cows with large-frame bulls imported from the Continent. Early Shorthorns were good milkers, and it may be presumed they in part inherited that quality along with the shortness of horn from their Continental ancestors. Little is known of the breed except from the uncertain authority of tradition down to the early part of the eighteenth century, though it is only right to infer that long before this time great care and even skill had been bestowed upon it. The earliest records show that purity of breed was fully appreciated, and this important fact could not have been universal without previous experience and attention."

The great county of York, extending along the east coast of England from the river Humber to the Tees, and westward almost to the Irish Sea, has the honor of being the seat of the most noted examples of improvement in British cattle. It was this county which furnished

the foundation stock upon which Gresley in Staffordshire, Webster in Warwickshire, and that greatest of all breeders, Robert Bakewell, in Leicestershire, labored to create the breed of Longhorns, which filled all the middle counties of England during the eighteenth century, and was then regarded as the most valuable in the Kingdom. And it was Yorkshire, helped somewhat by the smaller county of Durham, adjoining on the north, which brought the famous Shorthorns to the front, following closely upon the best days of the Longhorns. The former replaced and practically absorbed the latter, spreading over all middle England and northward across the island and well into the lowlands of Scotland.

Inseparably connected with the development of the Shorthorn breed are the names of Robert and Charles Colling, who brought their favorites into a new era of fame and popularity during the last decades of the eighteenth century and the first of the nineteenth. The Collings were shrewd advertisers as well as good breeders. In those days of slow communication and absence of fairs and shows they adopted the clever plan of sending specimen animals of their breeding on long tours about their own and adjoining counties. Two of these animals became especially famous. "The Durham Ox," which had a live weight above $1\frac{1}{2}$ tons, and "The White Heifer that Traveled," weighing considerably over a ton, were driven about the country for several years and extensively exhibited. Almost equally valuable to this breed have been the later services of Bates and Booth and Cruikshank. Under these leaders, and in the hands of a host of able lieutenants and followers, this superb race of cattle has been raised to the highest rank in the United Kingdom, carried to the continent of Europe, and introduced into all British colonies. It was the first pure breed to make an impress upon the cattle of the United States.

The Shorthorns in America.—The Revolutionary war was scarcely over before attention began to be given to improving the cattle in America. Virginia led in the work with several small importations between 1783 and 1800, and from these pioneer animals the first pure-bred Durhams were taken to Kentucky. In 1817 there was a special importation for Kentucky use, from which the descendants can be fully traced to the present time. This stock was popularly called the "milk breed," but they were improved Shorthorns, some of them from the Collings herd. Also in 1817 some of like breeding reached New York and Massachusetts. A few years later they obtained a foothold in Pennsylvania. Several importations followed prior to 1835, but up to this time the breed did not seem to do well east of the Alleghenies. In Kentucky and Ohio, on the contrary, great progress was made. Twenty years of special activity then followed in the development of American Shorthorns. During this time the famous herd of Thorndale, New York, was built up, and the Alexander herd at

Woodburn, Kentucky. A quiet period of fifteen years was followed by another Shorthorn "boom," beginning after the civil war, and the climax came in September, 1873, when the celebrated New York Mills sale occurred. One hundred and nine head of Shorthorns were then sold at auction in three hours for \$380,000. Eight cows averaged \$14,000 each, and six others averaged \$24,000; one sold for \$35,000 and another for \$40,600. British breeders acknowledged that the United States possessed better Shorthorns than could be found in England, and sent over agents to take back some of them at any price. During the last hundred years the Shorthorn blood has been more generally distributed through the United States than that of any other cattle, and it has proved most acceptable as the basis of improvement for the common, or native, stock, both for beef production and dairy purposes.

The aim of nearly all the improvers of Shorthorns has been to secure early maturity, size, form, and beef-producing qualities. "All is useless that is not beef" was the motto of an eminent breeder, and he has had many followers. Thomas Bates is the most noted of the few who have seemed anxious to retain good milking capacity. The Shorthorns are a beef breed and have been so for generations. They are classed among the beef breeds at all the great exhibitions, and, as a breed, do not even pretend to be general-purpose animals. But there have always been good dairy cows among them, and in England, especially, strains and families have been kept somewhat distinct and known as "milking Shorthorns." A few breeders in the United States have followed this example, and enough were found in 1893 to make up a herd which entered the famous dairy-cow test at the Columbian Exposition and there made a most creditable record, as shown in the Appendix. This alone entitles the Shorthorns to a place in these pages, although their best friends would hardly claim them to belong to the class of special dairy breeds.

Characteristics.—In point of size the Shorthorns are probably the largest among pure breeds of cattle. In their modern form they are not so tall and have not so large a frame as some of their English ancestors, but the lower, blockier, fuller form maintains the maximum weight. Bulls ordinarily weigh a ton and more, sometimes running up to 3,000 pounds; mature cows range from 1,200 to 1,600 pounds, sometimes falling a little below and sometimes exceeding these limits. "The colors of the breed have always been red and white, with various blendings of these two. Many of the best among the early Shorthorns were pure white, but that color has lost caste, and red is especially fancied in this country. In England, however, the roan color is much more common than any other, and this peculiar blending of the red and white, popularly called 'roan,' is rarely, if ever, seen in any animal of the bovine race which does not possess some portion of the Shorthorn blood." (Sanders.) The head is comparatively short, broad, finely

finished, and attractive; the nose, lips, and eyelids flesh-colored and free from dark markings; eyes clear, bright, yet mild; ears thin, delicate, and creamy yellow inside; horns short and blunt, more or less curved downward, of a waxy yellow throughout, free from black tips, laterally flattened, and wide apart at the base; the neck is short and fine in the cow, heavy and well crested in the bull. All the special masculine and feminine features should be strongly represented in both sexes. The lines of the body are straight, the rectangular form, with well-filled points, broad, level back, full loin, heavy, thick buttocks, wide apart, brisket wide and full, legs rather short, close, fine-boned and well proportioned to size of body. Yet this describes the beef type. In the best milking strains the cows are rather more rangy and angular in outline, with large, hairy udders and good-sized straight teats, well placed. The skin over the whole body is flesh colored, soft, oily to the touch, and covered with fine short hair. The animals are quiet and kind in disposition. Nearly all show evidences of long-continued high breeding, and this has been carried to such an extent in many cases as to cause more or less delicacy of constitution and sometimes "shyness" in breeding.

Milk and butter records.—It has been already noted that among the early Durham and Teeswater cattle there was much dairy excellence, and that Shorthorns when first brought to America earned the name of "the milk breed." Among old records are those of cows giving 6, 8, and even 9 gallons of milk a day on grass alone. Although now latent in most lines, there seems to be a dairy quality inherent in the breed which some careful managers are able successfully to develop and propagate. Records of several dairy herds in the United States within a quarter century show a milking season of about two hundred and seventy-five days and an average product of 6,500 pounds of milk. One herd of 10 cows, from 3 to 12 years old, averaged 7,750 pounds in a year. Single cows have averaged much more, several instances being known of 10,000 to 12,000 pounds in a season. The Shorthorn milk is of good quality, rather above the average; the fat globules are of medium and fairly uniform size, so that cream separates easily; it is rather pale in color. In 1824 a cow near Philadelphia made over 20 pounds of butter in a week without special feeding. Herds of 40 cows have averaged 209 pounds of butter a year; the herd of 10 cows mentioned above averaged 325 pounds, and single cows have records of 400 pounds and over, one being of 513 pounds.

The first Shorthorn herdbook was published in England in the year 1822, but for nearly a century before pedigrees of some fine bulls had been kept with reasonable accuracy. The American Shorthorn Breeders' Association was organized in 1842 and publication of the herdbook of this country began in 1845, connecting with the Coates series in England. Volume 43 was issued in 1899, bringing the number of bulls to 134,566 and of cows to 231,979. At the time this volume

was issued nearly 15,000 pedigrees were in the secretary's hands for record and publication, making the total number of animals to be registered prior to the year 1900 more than 381,000. How many of

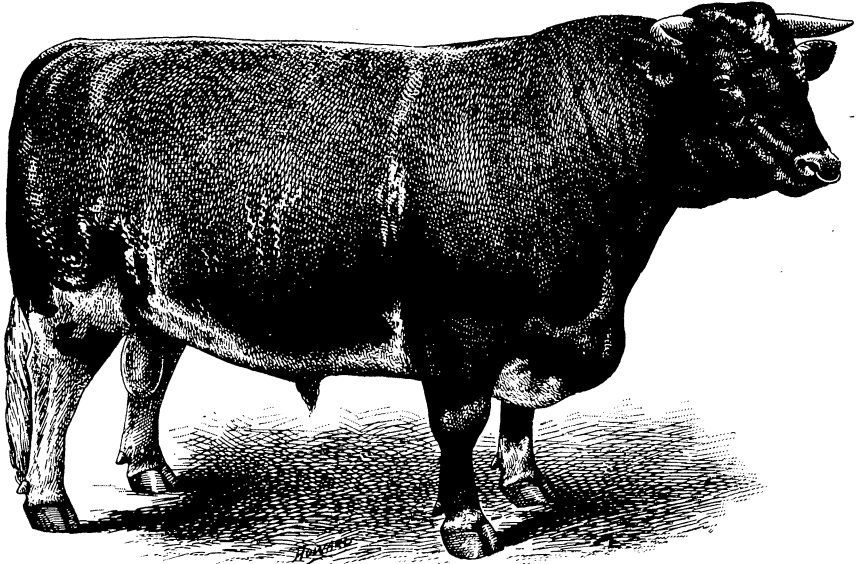


FIG. 19.—Shorthorn bull Baron Cruickshank 106296.

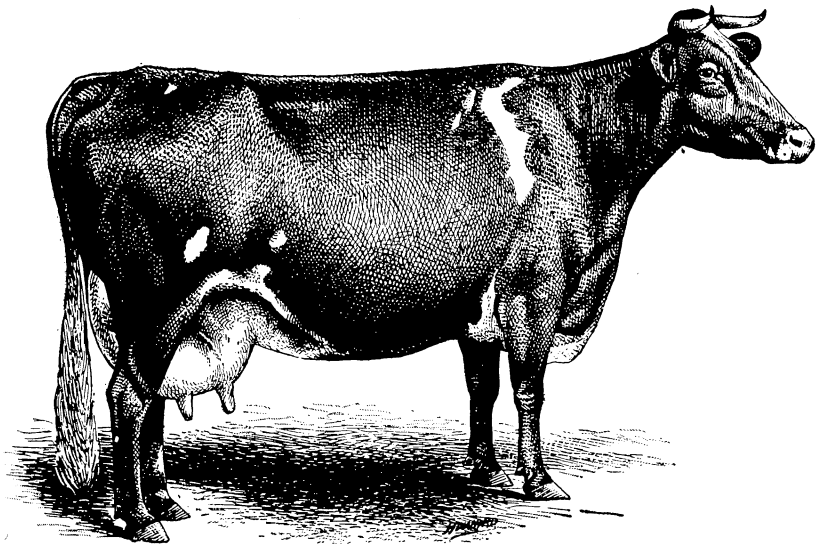


FIG. 20.—Shorthorn cow Kitty Clay 4th.

these pure Shorthorns are now living in the United States it is impossible to determine, but a rough approximation places the number at 130,000 to 150,000.

Types.—Second Baron Tuberosc 118023 was the bull selected to repre-

sent milking Shorthorns because of his individual merits and the quality of his get, but it was found impossible to make a satisfactory engraving from the only available photograph of this animal. A likeness of Baron Cruickshank 106296 has consequently been substituted. He is an imported bull and an excellent specimen of the breed in general, but not of the dairy type. He was bred in Scotland, his sire being Collingwood (57074), and his dam, Maria 10th, a famous cow, was sired by Field Marshal (47870). This bull was imported into Illinois in 1891, and weighed 2,100 pounds when 3 years old.

Kitty Clay Fourth (vol. 29, p. 553), a Pennsylvania animal, although bred in New York, was one of the cows chosen to represent the Shorthorns at the great dairy test at Chicago in 1893, and was the champion cow of her breed in the butter test. In the thirty-day trial her yield of milk was 1,593 pounds, which made 62½ pounds of butter. Two years later she gave almost 5,000 pounds of milk in three months, her best day being 65 pounds. At a fair-ground trial, when only 2 years old, she gave over 28 pounds of milk in one day, which made 1½ pounds of good butter. She is a member of one of the best milking families of Shorthorns in America, and her "general purpose" has been shown in one of her sons, which, after satisfactory service as a dairy sire, was slaughtered when 5 years old; his live weight was 2,080 pounds and the dressed weight of his four quarters 1,456 pounds. The accompanying likeness of this fine cow by no means does her justice, although it was the best that could be obtained. It shows her at the age of 10, when her weight was 1,348 pounds. Her sire was Dick Turpin 50740, S.-H. H. B.

APPENDIX.

COMPARISON OF DAIRY BREEDS.

Summary of results of tests of dairy cows at the World's Columbian Exposition, Chicago, 1893. Open to all breeds. Entered for competition: Jerseys, Guernseys, and Shorthorns.

No. 1, cheese test, 15 days, May.

Cows in test.	Milk produced.	Fat in milk.	Cheese made.	Price of cheese per pound.	Cost of feed.	Net gain.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Cents.</i>	<i>Dollars.</i>	<i>Dollars.</i>
25 Jerseys	13,296.4	601.91	1,451.8	13.36	98.14	119.82
25 Guernseys	10,938.6	488.42	1,130.6	11.95	76.25	88.30
25 Shorthorns	12,186.9	436.60	1,077.6	13.00	99.36	81.35

No. 2, 90-day butter test, June, July, August.

Cows in test.	Milk produced.	Fat in milk.	Butter credited.	Proceeds of butter.	Cost of feed.	Net gain.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
25 Jerseys	73,488.8	3,516.08	4,274.01	1,747.37	587.50	1,323.81
25 Guernseys	61,781.7	2,784.56	3,360.43	1,355.44	484.14	997.64
24 Shorthorns	66,263.2	2,409.97	2,890.87	1,171.77	501.79	910.12

Summary of results of tests of dairy cows at the World's Columbian Exposition, Chicago, 1893—Continued.

Average per day and per cow (test No. 2).

Cows in test.	Milk produced.	Fat in milk.	Fat.	Cost of feed.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Per cent.</i>	<i>Cents.</i>
Jerseys.....	32.7	1.56	4.78	26.1
Guernseys.....	27.5	1.24	4.51	21.5
Shorthorns.....	30.7	1.12	3.64	23.2

No. 3, 30-day butter test, September.

Cows in test.	Milk produced.	Fat in milk.	Butter credited.	Proceeds of butter.	Cost of feed.	Net gain.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
15 Jerseys.....	13,921.9	685.81	837.21	385.59	111.24	274.13
15 Guernseys.....	13,518.4	597.96	724.17	329.77	92.77	237.00
15 Shorthorns.....	15,618.3	555.43	662.67	303.69	104.55	198.89

Summary of results of comparative tests of cows of several dairy breeds of cattle, made at the Agricultural Experiment Stations of Maine, New York, and New Jersey. Averages for all breeds and lactation periods.

[From compilation by Prof. F. W. Woll, 1897.]

Breed.	Cows included.	Lactation periods.	Average yields per lactation period.		Average fat.	Average cost of—		
			Milk.	Butter fat.		Food eaten per day.	Producing 100 pounds of milk.	Producing 1 pound of fat.
	<i>Number.</i>	<i>Number.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Per cent.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
Ayrshire.....	10	20	6,909	248.5	3.60	14.5	78.5	21.5
Devon.....	3	5	3,984	183.3	4.60	10.3	94.0	20.5
Guernsey.....	8	10	6,210	322.9	5.20	13.5	82.8	15.8
Holstein-Friesian.....	9	10	8,215	282.0	3.43	17.2	74.7	21.5
Jersey.....	9	18	5,579	301.1	5.40	13.9	94.7	17.4
Shorthorn.....	4	5	8,696	345.4	3.97	14.3	78.7	19.4
Total.....	43	68	-----	-----	-----	-----	-----	-----

Average composition of milk of different breeds.

[From report of comparison of breeds at the New York Agricultural Experiment Station, 1891.]

Breed.	No. analyses.	Water.	Total solids.	Solids not fat.	Fat.	Casein.	Milk sugar.	Ash.	Nitrogen.	Daily milk yield.
		<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Lbs.</i>
Ayrshire.....	252	86.95	13.06	9.35	3.57	3.43	5.33	0.698	0.543	18.40
Devon.....	72	86.26	13.77	9.60	4.15	3.76	5.07	.760	.595	12.65
Guernsey.....	112	85.39	14.60	9.47	5.12	3.61	5.11	.753	.570	16.00
Holstein-Friesian.....	132	87.62	12.39	9.07	3.46	3.39	4.84	.735	.540	22.65
Jersey.....	238	84.60	15.40	9.80	5.61	3.91	5.15	.743	.618	14.07

POINTS OBSERVED IN JUDGING DAIRY CATTLE.

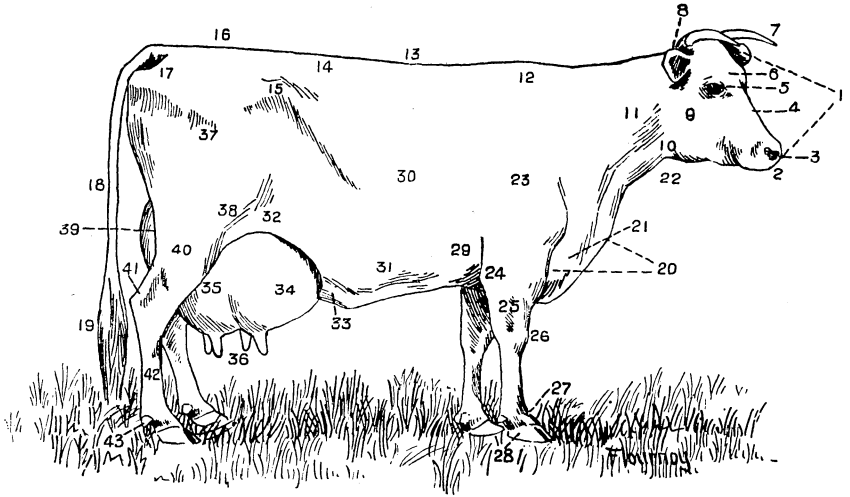


FIG. 21.—Diagram of cow showing points.

- | | | | |
|--------------|------------------|---------------------|--------------------|
| 1. Head. | 12. Withers. | 23. Shoulder. | 34. Fore udder. |
| 2. Muzzle. | 13. Back. | 24. Elbow. | 35. Hind udder. |
| 3. Nostril. | 14. Loins. | 25. Forearm. | 36. Teats. |
| 4. Face. | 15. Hip bone. | 26. Knee. | 37. Upper thigh. |
| 5. Eye. | 16. Pelvic arch. | 27. Ankle. | 38. Stifle. |
| 6. Forehead. | 17. Rump. | 28. Hoof. | 39. Twist. |
| 7. Horn. | 18. Tail. | 29. Heart girth. | 40. Leg or gaskin. |
| 8. Ear. | 19. Switch. | 30. Side or barrel. | 41. Hock. |
| 9. Cheek. | 20. Chest. | 31. Belly. | 42. Shank. |
| 10. Throat. | 21. Brisket. | 32. Flank. | 43. Dew claw. |
| 11. Neck. | 22. Dewlap. | 33. Milk vein. | |

ORGANIZATIONS OF BREEDERS OF PURE-BRED CATTLE AND ADDRESSES OF THEIR SECRETARIES FOR THE YEAR 1899.

- Ayrshire Breeders' Association, C. M. Winslow, Brandon, Vt.
 Brown Swiss Breeders' Association, N. S. Fish, Groton, Conn.
 American Devon Cattle Club, L. P. Sisson, Wheeling, W. Va.
 Dutch Belted Cattle Association of America, H. B. Richards, Easton, Pa.
 American Guernsey Cattle Club, W. H. Caldwell, Peterboro, N. H.
 Holstein-Friesian Association of America, F. L. Houghton, Brattleboro, Vt.
 American Jersey Cattle Club, J. J. Hemingway, No. 8 West Seventeenth street, New York, N. Y.
 American Polled Durham Breeders' Association, J. H. Miller, Mexico, Ind.
 Red Polled Cattle Club of America, J. McLain Smith, Dayton, Ohio.
 American Shorthorn Breeders' Association, J. H. Pickrell, Springfield, Ill.